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OCCUPATIONAL CONTACT DERMATITIS AMONG AIRCRAFT WORKERS

A. FLETCHER HALL, M.D.
SANTA MONICA, CALIF.

The terms "dural poisoning," "aluminum poisoning" and "metal poisoning" are used ill advisedly not only by aircraft workers and their families but also by the overwhelming majority of physicians who care for these occupational groups. The assumption that the majority of dermatoses among aircraft workers is due to aluminum or dural has led to many unwise and unwarranted transfers from one department of an aircraft plant to another as well as numerous unnecessary complete changes of occupation. It is my purpose in this report to clarify the approach to the subject of contact dermatitis among aircraft workers, with special reference to the identification of the contact substances most commonly at fault.

There seems to be a dearth of practical information regarding this problem in medical literature in the English language, and there is a total lack of statistical treatment of the subject. Oil folliculitis, or chloracne, is the only industrial dermatosis of major importance to the aircraft industry on which adequate studies have been published.[1] The present report, concerning itself primarily with contact dermatitis, will not deal with oil folliculitis, therefore.

MATERIAL

The clinical material on which this report is based consists of 755 employees of the Santa Monica and El Segundo plants of the Douglas Aircraft Company, Inc., who were referred to the "skin clinic" of this company during the seven months period between March 19, 1943 and Oct. 19, 1943. The skin clinic is a service furnished by the aforenamed employer for the diagnosis and treatment of cutaneous diseases of industrial origin occurring among the employees. The dermatologist spends several hours per week on each of the three shifts in the Santa Monica plant (approximately 45,000 employees) and on the day shift at the El Segundo plant (approximately 20,000 employees). Any employee with a dermatologic condition suspected of being occupational in origin by the employee or the foreman, the supervisor, the regular industrial medical staff or the outside private medical adviser (if the latter so desires) is referred to this clinic and is given an appointment to be seen by the dermatologist at the plant during the employee's regular working hours. Because the El Segundo plant was visited by the dermatologist only during the day shift, many of the cases at that plant were not worked up as completely or followed as satisfactorily as those at the Santa Monica plant; in several of the analyses to follow, therefore, the El Segundo figures will be omitted from consideration.

UNCLASSIFIED CASES

Immediately deductible from the total registered at the clinic are 80 Santa Monica cases and 95 El Segundo cases (total 175) which were unclassified for one or more of the following reasons: A tentative diagnosis was made, but the patient did not return for application of or observation of patch tests; no diagnosis was made, and the patient did not return for further study; the cutaneous lesions complained of disappeared before being seen by the dermatologist or before a definite diagnosis was made, or the patient left the employ of the company before a definite diagnosis could be arrived at.

CASES OF NONINDUSTRIAL ORIGIN

Of the 580 cases in which a diagnosis was established, 210 (Santa Monica 139 and El Segundo 71) were not of occupational origin, i. e. 36.2 per cent of all cases classified. Table 1 indicates the breakdown of these nonindustrial cases. In this table the heading "Contact Dermatitis" includes all cases of dermatitis due to nonoccupational contacts, such as plants, fingernail lacquer and other cosmetic preparations, soaps and bleaches in the laundering of clothing, toilet soaps and local applications made at home; "Dermatophytosis" includes mycotic infections of the feet or the hands, dermatophytids, monilial infections and tinea circinata; "Dyshidrosis" refers to dyshidrosiform eruptions of the sides of the fingers and hands fluctuating with relation not to type or time of work but to weather, temperature and nervous tension. The other headings need no explanation.

CASES OF INDUSTRIAL ORIGIN

The cases determined to be of industrial origin totaled 370 (63.8 per cent of all cases classified). In 21 of these the condition was folliculitis caused by contact with oil and did not differ in clinical appearance or response to therapy from that condition as described in many excellent articles on the subject.[1] These cases (5.7 per cent of all cases of dermatosis determined to be industrial) will not be discussed further than to point out the low incidence of folliculitis due to contact with oil in a plant where cutting oils are used by many workers of both sexes operating machine tools.

Of the 349 cases of contact dermatitis of industrial origin remaining for consideration, 147 were studied

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This paper, in a symposium on "Wartime Industrial Dermatoses," is published under the auspices of the Section on Dermatology and Syphilology.

1. Schwartz, Louis, and Russell, J. P.: Skin Hazards in Airplane Manufacture, Pub. Health Rep. **56**: 1581-1593 (Aug. 8) 1941. Schwartz, Louis: Dermatitis from Cutting Oils, ibid. **56**: 1947-1953 (Oct. 3) 1941; Industrial Dermatitis in Our War Industries, Indust. Med. **11**: 457-462 (Oct.) 1942. Schwartz, Louis, and Barlow, F. A.: Chloracne from Cutting Oils, Pub. Health Rep. **57**: 1747-1752 (Nov. 20) 1942. Leggo, Christopher: Cutting Oils and the Skin, Indust. Med. **12**: 102-108 (Feb.) 1943.

at the El Segundo plant; as was previously set forth, a significant proportion of these cases were not well enough classified and followed up to warrant their being thrown together with the Santa Monica group for statistical analysis. For the purposes of the present study, at least, the El Segundo group will be omitted from further consideration, leaving the 202 cases at the Santa Monica plant for analysis. It may be said, however, that the El Segundo cases closely paralleled the Santa Monica cases in all respects. The main reasons for omitting them are (1) that, because of unsupervised patch testing and reading, many apparently multiple sensitivities were reported which were not borne out by subsequent experience and (2) many patients did not return for reexamination after therapeutic transfer to a different department, so that the validity of the diagnosis could not be checked.

The 202 cases of occupational contact dermatitis which will be subjected to special study fall into five groups, according to the causative contact factors involved: the zinc chromate primer, 132 cases (65.3 per cent); dural, 10 cases (5 per cent); aluminum, 4 cases (2 per cent); other identified occupational contacts, 47 cases (23.2 per cent); unidentified but apparently occupational contacts, 9 cases (4.5 per cent). These groups will be considered under separate headings.

TABLE 1.—*Two Hundred and Ten Cases of Dermatoses of Nonindustrial Origin Encountered Among 580 Cases Definitely Classified (36.2 per Cent)*

Contact dermatitis	30	Lupus erythematosus	3
Insect bites	26	Herpes zoster	3
Dermatophytosis	24	Flexural eczema	2
Scabies	16	Nummular eczema	2
Dyshidrosis	15	Erythema multiforme	2
Seborrheic dermatitis	11	Neurotic excoriations	2
Pityriasis rosea	11	Pyoderma	2
Psoriasis	8	Intertrigo	1
Lichen simplex chronicus	6	Pruritus senilis	1
Acne	6	Icterus	1
Impetigo contagiosa	5	Tuberculosis miliaris faciei	1
Herpes simplex	5	Erythema figuratum pustans	1
Urticaria	5	Callus	1
Granuloma annulare	5	No diagnosis established (but definitely nonindustrial)	6
Drug eruptions	5		
Lichen planus	4		

DERMATITIS DUE TO CONTACT WITH ZINC CHROMATE PRIMER

Zinc chromate primer is probably the most ubiquitous substance in an aircraft plant; it is a dull green coating with which most metal sheets and parts are covered from the time they enter the factory until the finished plane comes out ready for its final coat of camouflage paint. All workers who apply or remove this primer or who cut, file, burr, countersink or drill through metal coated with it are exposed to it as an occupational hazard. Furthermore, apparently unconcerned bystanders, such as janitors sweeping up the shavings, inspectors near whom the aforementioned operations are being carried out, workers repairing tools, such as drill motors and rivet guns which contain primer coated drillings, are sufficiently exposed to be sensitized. After an employee has become sensitized, even the most indirect contacts may be sufficient to initiate a flare-up of the dermatitis; one patient was encountered whose dermatitis continued in severe form in spite of absence from work until his wife, who was a riveter, not sensitive to the primer, was transferred to a job where she no longer got any primer coated drillings in her hair and on her clothing.

Sensitivity to the primer is determined by patch testing with a dime size metal disk coated with the primer in question (sprayed on in the paint shop and allowed to dry for at least several days): The disk is routinely placed against the skin of the inner-anterior surface of the left upper arm; it is covered by a gauze square of several layers thickness, a little larger than the disk, and the whole is made fast with adhesive tape. This patch test is removed at the end of twenty-four hours and a preliminary reading recorded as the "twenty-four hour reading"; twenty-four hours later the "forty-eight hour reading" is recorded, and a "seventy-two hour reading" is recorded whenever possible. A plus-minus (±) reaction represents a very faint but distinctly visible change in the area of skin which was in direct contact with the test material; a 1 plus reaction represents an unmistakable erythematous but impalpable reaction delineating the area of actual contact with the test material. A 2 plus reaction shows erythema with palpable elevation in the form of a plaque or an aggregation of papules. A 3 plus reaction indicates vesiculation, while a 4 plus reaction is a frankly denuded area representing the site of contact.

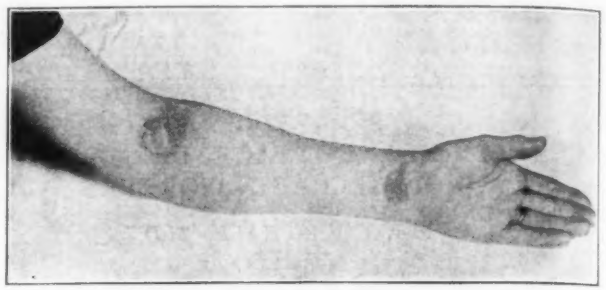

Fig. 1.—Erythematosquamous patches on the flexor surface of the wrist and in the cubital fossa, typical of sensitivity to zinc chromate.

Of the 132 employees proved to be sensitive to the primer, only 4 (3 per cent) failed to give at least a 1 plus reaction to patch tests with the primer coated disk. Of the many employees with nonindustrial cutaneous eruptions who came in contact with the primer in their work and were patch tested with the disk for various reasons, only 1 showed as much as a 1 plus false positive reaction (this patient had scabies, which cleared after routine antiscabetic treatment; he continued to be exposed to the primer without dermatitis

Fig. 2.—Erythematous papular aggregations on the ulnar side of the forearm. The upper arm shows a 1 plus reaction to a zinc chromate disk, surrounded by scattered papular dermatitis from adhesive tape.

developing). The dependability of the patch test with the primer coated disk is thus seen to be of a high order.

Sensitivity to the Ingredients of Zinc Chromate Primer.—After considerable experience with many persons who reacted to these disks and with a few who did not react to the disks but nevertheless were affected on contact with the primer, as indicated by their clinical behavior, a study of sensitivity to the ingredients of the primer was attempted. The primer in question (an Army and Navy specification) is a suspension of finely divided zinc chromate powder and manganese silicate in a solution of certain resins in xylene; these include a phenol-formaldehyde resin, a natural resin and a phthalic anhydride. The identities and proportions of the ingredients will not be published here; suffice it to say that for patch testing purposes the zinc chromate powder was mixed with calcium carbonate, and each of the resins was put into xylene solution in the concentration in which each is found in the liquid primer. No patch tests were made with manganese silicate. Xylene 60 per cent in olive oil was used as a control but only if all patch tests with the resins in xylene were positive; no positive reactions to this control substance

Fig. 3.—Nummular eczematous plaque on the dorsum of the base of the thumb typical of sensitivity to zinc chromate.

were encountered. It was realized that patch testing with these ingredients in the concentrations found in the liquid primer would not give a true parallelism with exposure to these substances on dry drillings and other materials; the results of the tests in these concentrations, however, proved quite satisfactory as to "sensitivity and specificity."

By the use of patch tests with the aforenamed substances the employees with "zinc chromate dermatitis" could immediately be divided into two distinct groups, each with its own clinical characteristics and prognosis. By far the largest group was composed of those who were sensitive to the zinc chromate pigment only; the other consisted of persons sensitive to one or more of the resins whether also sensitive to the zinc chromate pigment or not.

(*a*) Sensitivity to Zinc Chromate Pigment Only: Of the 132 persons with dermatitis due to contact with the primer, 90 (68 per cent) were sensitive to the zinc chromate pigment only. The cases of sensitivity in this group present certain characteristics which make them clinically distinguishable from cases of other types of contact dermatitis, as follows:

1. The duration of exposure to the substance before onset of symptoms or signs is long. The average length of exposure before the appearance of the eruption was seven months. Eighteen cases of over one year's exposure averaged two years of contact before evidence of sensitivity became apparent; in 1 instance the period was nine years. On the other hand, there were only 10 patients in this group who showed evidence of sensitivity within one month of first exposure: 5 of these gave

Fig. 4.—Erythematosquamous patches on the dorsa of the fingers, typical of sensitivity to zinc chromate (same patient as in figure 3).

the duration of exposure as one month, 2 as two weeks, and 2 (2 per cent) as one week. One of the latter suffered from preexisting atopic dermatitis, while another was subject to asthma.

2. The distribution of the lesions of the skin is quite characteristic. In order of frequency the sites are the radial and flexor aspects of the wrists (fig. 1), the dorsal aspects of the proximal portions of the thumbs (fig. 3), the volar and ulnar aspects of the forearms (fig. 2), the dorsal aspects of the hands and fingers (fig. 4) and occasionally the ankles at the "short sock level." Rarely the "V of the neck" or the base of the neck posteriorly or laterally is involved; as a rule, this distribution is seen only in workers who drill overhead. One important exception to the pattern of distribution just set forth is that in Negro workers sensitive to zinc chromate pigment only (4 in this group) the eyelids, the sides and the front of the neck and the cubital fossae are invariably affected. No involvement of eyelids was

Fig. 5.—Faint papulosquamous aggregations on the flexor surface of the forearm, typical of zinc chromate sensitivity, and erythema of the radial side of the cubital fossa, typical of sensitivity to resins in the primer to which this patient was also sensitive (same patient as in figures 3 and 4).

encountered in white workers unless sensitivity to resins was also demonstrated.

3. The morphologic character of the eruption is rather constant. Nummular eczematous plaques or groups of papules are the rule. The plaques begin as ill defined erythematous "blotches," usually seen on the flexor

aspects of the forearms and the radial sides of the wrists, later becoming slightly elevated and squamous and finally exhibiting numerous denuded points which give rise to serous crusting; similar lesions are frequently seen on the dorsal aspects of the hands and fingers. The papular aggregations begin as rather loosely

Fig. 6.—Erythema and thickening of the upper eyelids, typical of sensitivity to resins in the primer (same patient as in figures 3, 4 and 5).

grouped tiny pale pink papules, usually seen on the dorsal aspects of the hands and the dorsoradial aspects of the wrists and in the cubital fossae; the papules in these groups then become larger and more numerous, finally forming papulosquamous plaques, which rarely exhibit crusting. A generalized erythema of the involved areas is not often encountered, and the papules are practically never scattered except in the skin of Negroes, where scattering is the rule. The plaques and papular groups vary in size from 1 to 6 cm. in diameter and tend to be round and fairly definitely marginated.

(*b*) Sensitivity to resins only: Seventeen employees (13 per cent of those with dermatitis due to contact with the primer) were found to be sensitive to one or more of the resin ingredients of the primer but not to the zinc chromate pigment. The dermatitis in this group was sufficiently uniform in its characteristics to form a separate clinical entity from that previously described.

1. The average duration of exposure before onset of symptoms is only slightly less than the average quoted for the preceding group, but in 3 cases (18 per cent) it was less than one week.

2. The distribution is constant. The eyelids were affected in all cases (figs. 7 and 8), and the sides of the upper two thirds of the neck (fig. 9) and the cubital fossae in the great majority. The hands and fingers were affected in only 1 case, and the wrists and forearms in only 6.

3. In morphologic character the eruption is distinct from that due to the zinc chromate pigment alone. The dermatitis of the eyelids begins as a faint erythema, soon followed by slight swelling, which usually gives way to thickening with accentuation of the folds as the color becomes dull red; the lower lids become involved later and less severely. The dermatitis of the sides of the neck frequently appears as oval, dull red, finely squamous, palpable plaques whose long axes parallel the "lines of cleavage" of the skin as in pityriasis rosea (fig. 8). When the cubital fossae are involved, there is a poorly bordered erythema at their lateral limits (fig. 5); the radial aspects of the forearms and wrists are occasionally affected in a similar manner.

To obtain a closer estimate of the frequency of sensitivity to resins alone, 6 cases should be added (already included in the 132 due to contact with the primer, the skin reacting to the primer coated disk) which showed all the characteristics of dermatitis due to resins alone but which were seen before patch testing with the ingredients was instituted. This would raise the incidence of sensitivity to resins alone from 13 to 17 per cent of the total number of cases of dermatitis due to contact with the primer.

(*c*) Sensitivity to zinc chromate and resins: Nineteen employees (15 per cent of those with dermatitis following contact with the primer) proved sensitive to one or more of the resins as well as to the zinc chromate pigment. It is interesting to note that the clinical picture presented by the patients of this group was exactly what one would expect to obtain by superimposing one of the dermatitis types described on the other. These patients all showed erythema or thickening of the eyelids or both in addition to erythematosquamous plaques or papular aggregations on the fingers, hands, wrists or forearms (figs. 3, 4, 5 and 6). Several of them also showed erythema of the center of the face and, in women, excoriations between the breasts and across the anterior upper part of the chest and the shoulders.

Importance of Identifying the Causative Ingredient.—No evidence of development of tolerance to either the zinc chromate or the resins, once an employee is sensitized, has been observed. In fact, the opposite appears to be the rule: Once sensitivity manifests itself, it is more likely to increase in degree with exposure than to remain constant. If preventive measures in the form of protective clothing or local applications are not immediately successful (and they usually are not), prompt transfer to a job remote from the sensitizing substance is imperative. Although it is not within the scope of

Fig. 7.—Erythema and thickening of the eyelids, typical of sensitivity to resins in the primer, without involvement of forearms. The left upper arm shows a 2 plus reaction to a zinc chromate disk while the right upper arm shows 1 and 3 plus reactions to resins. A patch test with zinc chromate alone was negative.

this report to deal with the complications of satisfactory placement of sensitized persons, several important factors may be pointed out.

The majority of persons who are sensitive to the zinc chromate pigment are sensitive also to other chromates and to chomic acid. They cannot, therefore,

be expected to do well in anodizing or working on anodized metals (chromic acid), aluminum tubing or cadmium plated parts (which have usually been rinsed in chromic acid), or in working with certain sealing compounds or cements which contain zinc chromate as an anticorrosive, or in lithographing or blue printing

Fig. 8.—Acute erythema and swelling of the eyelids with pityriasis rosea-like plaques on the neck—a typical example of sensitivity to resins in the primer. This patient reacted to all three resins, was nonreactive to zinc chromate alone, and did not show a positive reaction to the zinc primer coated disk until seventy-two hours after removal of the disk.

(in which potassium dichromate is used); some cannot even work with steel of high chromium content without relapse of their dermatitis. The worker who must avoid primer-coated metals because of sensitivity only to the resins is not affected by the foregoing prohibitions, but he must not be transferred to a job where he will be required to work micarta, bakelite, plexiglass and other resinous substances. An ill considered transfer may not only cause the worker additional discomfort and disability but cause him to quit his job; furthermore, repeated experimental transfers are expensive to the employer and are bound to slow production.

DERMATITIS DUE TO CONTACT WITH DURAL

Dural is an alloy of aluminum 95 to 95.5 per cent, copper 3.5 to 4 per cent, manganese 0.5 per cent, magnesium 0.5 per cent and traces of iron and silicon. In view of its high aluminum content one would expect the dermatitis caused by contact with this substance to be similar to that caused by aluminum; this, however, is not the case, as sensitivities to the two metals are entirely distinct. Dural is much stronger than aluminum and is used in those parts of the plane where additional strength is needed. "Alclad," incidentally, is sheet dural covered with a layer of aluminum.

Lounsberry [2] in 1939 found "an infected fish oil-dural combination" to be "the main causative factor" in dermatitis in the aircraft industry; dermatitis attributable to this contact was not encountered in this series of cases.

Of the 202 cases of contact dermatitis of occupational origin, 10 (5 per cent) were determined to be due to dural. Each of the affected employees showed a persisting 1 plus or 2 plus reaction to patch tests of dural drillings (forty-eight or seventy-two hour reading). A doubtful or 1 plus reaction to drillings of any metal which disappears within twenty-four hours after removal of the patch test is inconclusive because the pointed and angular particles will sometimes evoke pinkness of the skin by pressure against it. It may be pointed out that care must be exercised in the selection of the drillings used for patch testing: they must be obtained from metal which has not been painted, oil coated or anodized (chromic acid).

The dermatitis caused by dural drillings, filings or grindings in sensitive persons is as a rule clinically distinguishable from that due to contact with primer:

1. The duration of exposure before evidence of sensitization appeared averaged 5.4 months; in no case observed was it longer than eight months or shorter than one month.

2. Some aspect of the forearms was involved in all cases, but the flexor aspect of the wrists in only 1; the sides of the neck were affected in half the cases, but the front of the neck in only 1. The eyelids

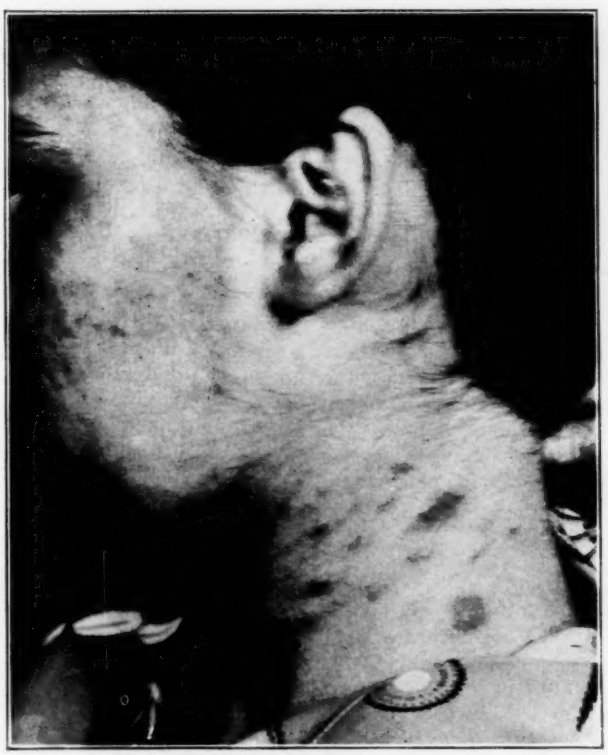

Fig. 9.—Same patient as in figure 8.

showed slight thickening in only 2 cases. No cases were observed in which the hands or the fingers were involved.

3. Morphologically, the eruption is characterized by scattered pale pink fine papules, usually excoriated (fig. 10). The excoriations are of the pinpoint fine, sanguineous crusted type so often associated with scabies; in fact,

2. Lounsberry, C. R.: Occupational Dermatoses in the Aircraft Industry, California & West. Med. **51**: 309-313 (Nov.) 1939.

in 2 cases the fine excoriations were present without definite papules, but in 1 case erythema was the only finding.

DERMATITIS DUE TO CONTACT WITH ALUMINUM

Only 4 cases (2 per cent of the 202 cases due to occupational contacts) proved to be due to aluminum dust, filings, burrings and like products; each of the

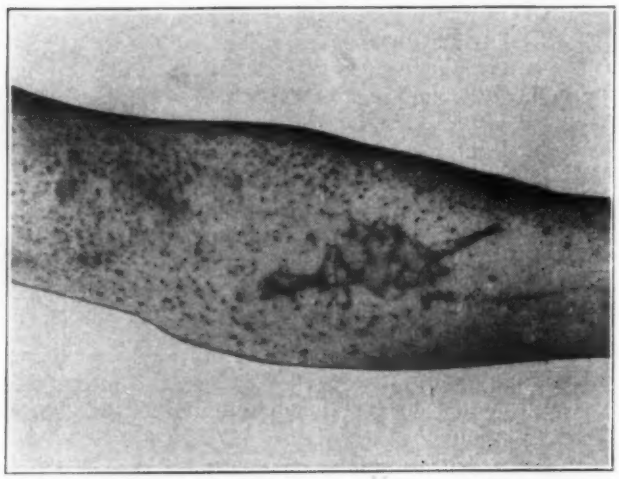

Fig. 10.—Typical example of contact dermatitis due to dural shavings and drillings. The papular nature of the eruption is in obvious contrast to the plaquelike nature of dermatitis due to zinc chromate.

patients showed a persisting 1 plus reaction to aluminum filings. The eruption was fairly characteristic:

1. The duration of exposure before onset of the dermatitis averaged 4.5 months; in 2 cases this period was only three weeks, and in 1 eleven months. The onset of symptoms is usually rather sudden.

2. The flexor surfaces of the forearms and wrists were affected in all cases, and the front of the face and neck in 1. No other areas were observed to be involved except the lower parts of the legs and the ankles (1 case).

3. In morphology this eruption is quite different from the others described, being comparatively evanescent. The lesions themselves tend to be wheal-like and suggest insect bites but are without central puncta, of course. In general the lesions are more erythematous than those from other contacts, particularly immediately after work, but may disappear entirely within twenty-four hours away from work.

CONTACT DERMATITIS WITH MULTIPLE SENSITIVITIES

All employees coming in contact with primer, dural and aluminum were patch tested to these three substances routinely, usually before being seen by the dermatologist. Some of them reacted definitely to more than one of the test materials. A few of these employees could be shown to be truly sensitive to more than one of the substances in the light of the subsequent behavior of their skin in different jobs, but most of them were transferred to jobs away from all substances causing reactions or left the employ of the company and could not be checked. The classification of their cases was made according to the clinical characteristics.

Of the 132 persons whose dermatitis was considered to be due to contact with primer, 5 (3.7 per cent) reacted positively to dural, 3 (2.2 per cent) to aluminum and 4 (2.9 per cent) to both. Of the 10 persons with dermatitis considered to be caused by dural, 2 gave persisting doubtful reactions to the primer coated disk, and 1 reacted positively to the disk and to aluminum. Of the 4 persons whose dermatitis was considered to be due to aluminum, 1 reacted positively to dural as well.

In summary, 16 employees (10.9 per cent) of the 146 who had dermatitis due to the three routinely tested substances reacted positively to more than one; of these, 5 (3.6 per cent) gave positive reactions to all three.

CHARACTERISTICS COMMON TO CUTANEOUS ERUPTIONS DUE TO CONTACT WITH PRIMER, DURAL AND ALUMINUM

The four types of dermatitis described in the foregoing sections have several characteristics in common:

1. They are all pruritic and as a rule itch more severely as the work day progresses and most severely after work, particularly if the employee goes to bed soon after returning home from work. The itching has usually subsided somewhat by the beginning of the next work day (unless dermatitis is severe).

2. The symptoms and signs of the dermatitis usually subside over week ends off work, and even severe forms show definite improvement after one week away from the sensitizing substance. Complete recovery is the rule after one to four weeks' freedom from contact with the offending substance; if this does not take place, it is probable that the employee is still coming into contact with it (at home, in clothing or in his new working environment). Superficial fractional x-ray treatments may hasten recovery, particularly in severe or chronic cases, but as a rule they are not necessary.

3. Systemic symptoms have not been observed in any of the cases comprising this study.

DERMATITIS DUE TO MISCELLANEOUS OCCUPATIONAL CONTACTS

Of the 202 cases of dermatitis due to occupational contacts, 47 (23.2 per cent) were caused by substances proved to be other than primer, dural or aluminum. The most common sensitizing factor in this group was the soap powder which most of the workers used in washing up at the plant; this was the causative factor in 9 cases of dry, scaly, pale pink dermatitis of the hands, some with fissure formation. Spun glass, which is used as an insulating material against cold and sound, accounted for 7 cases of rather transitory erythema of the volar and ulnar aspects of the forearms and sometimes the sides and the front of the neck, accompanied by more or less generalized itching; the erythema clears up as the worker develops tolerance to the mechanical irritation exerted by the fine hard particles (no positive reactions were elicited by patch tests).

TABLE 2.—*Forty-Seven Cases of Dermatitis Due to Industrial Contact with Substances Other Than Zinc Chromate Primer, Dural and Aluminum*

Powdered soap (hand wash)	9	Black stencil dye	1
Spun glass	7	Layout dye	1
Sawdust (different woods)	3	Dope	1
Kelite (soap solution for washing aluminum tubes)	2	Dope remover (acetate)	1
Magnaflux solution (kerosene with iron oxide)	2	Neoprene gloves	1
Paint stripper	2	Sponge rubber (in mask)	1
Paint thinner	2	"Hydrocal" (a proprietary casting plaster)	1
"Bronze green lacquer"	2	Lead	1
Butesin picrate ointment	2	10% sulfuric acid	1
Cleaning solvent	1	D72 photo developer	1
O. D. camouflage paint	1	Caustic soda (sodium hydrate) solution	1
Turpentine	1	Chromic acid (ulcers)	1
"Protek"	1		

The other occupational causes of contact dermatitis, some sensitizers and some primary irritants, were not encountered with sufficient frequency to justify discussion of each. For the sake of completeness they are listed in table 2.

DERMATITIS DUE TO UNIDENTIFIED OCCUPATIONAL CONTACTS

Nine cases of contact dermatitis were encountered in which the causative agent could not be identified by patch tests but which were apparently of occupational origin. The dermatitis cleared when the patient remained away from work and recurred promptly on his return to work; if he remained in the employ of the company, the skin remained free from the eruption after a change of job. The inability to identify the causative agent was in some cases due to lack of cooperation on the part of the employee who suffered from the dermatitis; in others, either the right substances were not suspected or patch testing was not indicative.

In connection with this subject a warning is in order: There are many primary irritants used in the aircraft industry which cannot safely be used for patch testing without appropriate dilution; any unfamiliar substance should be thoroughly investigated before being applied in a patch test, for disabling and disfiguring reactions are possible.

SUMMARY AND CONCLUSIONS

Approximately one third of all dermatologic cases studied in an industrial clinic for employees with diseases of the skin in a large aircraft manufacturing plant were found to be nonoccupational in origin.

"Dural poisoning," "aluminum poisoning" and like expressions have been popularized by aircraft workers and threaten to find their way into medical parlance as haphazard diagnoses. In the series of 202 cases of occupational dermatitis subjected to analysis in this report, only 5 per cent were found to be due to dural and only 2 per cent to aluminum.

Zinc chromate primer was found to account for the great majority of cases of occupational contact dermatitis in the aircraft industry as presented by the Douglas Aircraft Company. The cases identified as caused by ingredients of this substance totaled 132 (65.3 per cent of all cases of dermatitis from occupational contacts). Of these, 68 per cent were due to the zinc chromate in the primer, 17 per cent were due to one or more of the resin ingredients and 15 per cent were due to both.

The clinical characteristics of the dermatitis caused by sensitivity to, plus contact with, each of the aforenamed substances are sufficiently true to type to make a tentative specific diagnosis possible; the specificity of patch tests with each of these substances is sufficiently high to confirm or disprove the vast majority of such clinical diagnoses.

A positive reaction to primer coated metal in the presence of dermatitis of the hands or arms or both but without involvement of the eyelids or the upper parts of the neck in a worker exposed to chromates or chromic acid indicates that the dermatitis is due to these substances; to clear such a dermatitis the worker will in all probability have to be transferred to a job where he will not come in contact with any of these sensitizing factors.

A positive reaction to primer coated metal in the presence of dermatitis of the eyelids, the upper parts of the neck and the lateral margins of the cubital fossae but without involvement of the forearms, hands or fingers in a worker exposed to zinc chromate primer indicates that the dermatitis is due to one of the resinous ingredients of the primer, and although the worker will probably have to be transferred away from contact with zinc chromate primer, he is not sensitive to chromates in general but may be sensitive to synthetic resins such as bakelite or masonite.

A positive reaction to primer coated metal in the presence of dermatitis involving the hands, the arms, the neck and the eyelids in a worker exposed to zinc chromate primer indicates that the dermatitis is due to chromates and resins, and the worker will probably have to avoid both if complete clearing of the dermatitis is to be anticipated.

A positive reaction to dural (filings or other particles) persisting at least twenty-four hours after removal of the patch test in the presence of a scattered pale papular excoriated dermatitis of the forearms in a worker exposed to drillings, filings or burrings of that metal indicates that the dermatitis is due to dural, and the worker will have to avoid contact with it to achieve complete healing of the dermatitis.

A positive reaction to aluminum (filings or other particles) persisting at least twenty-four hours after removal of the test preparation in the presence of an evanescent erythematous urticate eruption involving the flexor surfaces of the wrists and forearms in a worker exposed to drillings, filings or burrings of that metal indicates that the dermatitis is due to aluminum, and the worker will have to avoid contact with that metal to achieve complete healing of the dermatitis.

No evidence of "acquired immunity," "increased tolerance" or "hardening" to contact with any of the aforenamed substances was noted. Sensitivity develops after a comparatively long period of exposure; once developed, it tends to increase rather than decrease. It is obvious, therefore, that preemployment patch testing in an effort to reduce the incidence of dermatitis due to these substances would be worthless.

There was no evidence in the present series of cases to indicate that dermatitis due to contact with the aforementioned substances will not heal spontaneously in a reasonable length of time after contact is terminated. In view of this tendency it is important that treatment be limited to such local applications as surely will not irritate and thus prolong the dermatitis. It is sometimes expedient to use superficial fractional x-ray therapy to hasten improvement, particularly when severe discomfort and/or disability are factors.

No evidence of systemic involvement due to contact with or inhalation of the mentioned substances was observed.

Twenty-five substances other than zinc chromate primer, dural and aluminum were identified as causative factors in the production of 47 cases of occupational contact dermatitis. Nine of these cases were due to soap. Seven were due to spun glass. Twenty-three other substances accounted for the remaining 31 cases in the group.

Nine cases of dermatitis were considered to be occupational in origin although the substance responsible for the dermatitis was not identified. This number represents only 4.5 per cent of the occupational cases, indicating that, if careful study brings to light no occupational contact which can be identified as causative, the presumption should be that the dermatitis is nonindustrial in origin unless definite correlation with work is evident.

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DERMATITIS FROM EXPLOSIVES

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In times of peace explosives are not a large factor in the general causes of industrial dermatitis. In wartime, however, dermatitis from explosives is a serious problem to those concerned with the prevention of industrial diseases.

Explosives may be classified in the following manner: (1) propellants, used to propel projectiles, and (2) military high explosives, used for bursting charges and for setting off the more stable high explosives (fig. 1).

The propellants are smokeless powder and black powder.

The military high explosives are subdivided, the more stable explosives being used for bursting charges, and the sensitive explosives for primers, fuses, boosters and detonators. Sensitive explosives are tetryl, mercury fulminate, lead azide, lead styphnate, sensol and nitroglycerin. Stable explosives are trinitrotoluene (TNT), amatol, ammonium picrate (explosive D), lyddite

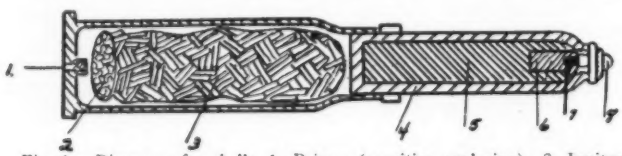

Fig. 1.—Diagram of a shell: 1. Primer (sensitive explosive). 2. Igniter—black powder. 3. Propellant charge (nitrocotton). 4. Projectile. 5. Bursting charge (TNT amatol). 6. Booster (tetryl). 7. Detonator (sensitive explosive). 8. Fuse (sensitive explosive).

(chiefly picric acid), pentaerythratoltetranitrate (PETN), hexite (hexanitrodiphenylamine) and dinitrotoluene (DNT).

TETRYL

Tetryl, or trinitrophenylmethylnitramine, is a light yellow crystalline powder. It is made by sulfonating dimethylaniline and then adding this to nitric acid. The tetryl is separated from the acid mixture and purified by recrystallizing from a solution of benzene or acetone. It is then taken to the drying chamber and dried.

Dermatitis caused by tetryl is probably the most frequent cutaneous hazard accompanying the manufacture of munitions. It occurs in the making of tetryl, especially in the drying house, where it develops in about 50 per cent of the workers; it occcurs also in the production of pellets and in the loading of fuses and boosters. One shell-loading plant, for example, with a working population of 6,364 exposed to tetryl, has reported 1,904 (30 per cent) having tetryl dermatitis in the first six months of operation.

Dermatitis generally occurs during the first three weeks of employment among those who have never before been exposed to the material, cases reaching a maximum number about the third week. Most workers become "hardened" from one to four weeks after the development of dermatitis and are no longer irritated by tetryl. Especially is this true if they continue working while being treated. It was noted at one shell-loading plant that about 85 per cent of the workers who had been affected became nonreactive; while at another, although exact figures are not available, the incidence of dermatitis became lower the longer the workers were employed. A small percentage of workers apparently never become completely insensitive and dermatitis develops whenever they are exposed even to minute quantities of tetryl. The amount remaining on a fellow worker's street clothes has in some instances been sufficient to light up dermatitis in a susceptible worker although the contact lasted only during the ride home. Some workers become "hardened" more gradually or to a lesser degree and never quite to the point of complete immunity.

The workers most frequently affected are those taking the tetryl into and out of the drying house, where they are exposed to large amounts of tetryl dust, those packing the tetryl for shipment, those blending tetryl with graphite in the loading plants, those working at the pellet making machines, those inserting the pellets into boosters and those loading powdered tetryl into booster bags. The blending of tetryl is done in explosion-proof compartments, the operator being outside at a considerable distance (remote control). The pelleting is done in a similar manner except that the operator watches through a slit in the walls or sees the operation from a distance by means of mirrors.

The most frequent sites of tetryl dermatitis are about the mouth (fig. 2), on the cheeks, around the eyes and on the neck. In some cases there is considerable edema of the face, the eyes being swollen shut. Dermatitis of the hands, the arms, the genitals and other parts of the body touched with soiled hands may also occur but is infrequent. Nosebleed without ulceration of the nasal mucosa often occurs. The skin itches, then becomes erythematous, and papules and vesicles may develop. The latter may break and ooze. Later, roughness and scaling may occur. The palms and fingers are usually stained dark yellow, and the hair of blonds becomes a typical "tetryl red." Most workers show staining of the hands, and a few coloration of the hair without any evidence of cutaneous irritation. Workers thus affected are sometimes called "canaries." The epithelium of the palms is indelibly stained, and it takes two or three weeks after exposure ceases for the stain to fade out.

The treatment of tetryl dermatitis consists in the application of cold boric acid dressings to the swollen face, followed by mild ointments as the swelling disappears and desquamation occurs.

The stain on the hands is difficult to remove. The use of a 10 per cent aqueous solution of sodium sulfite, followed by washing with soap and water, is thought to be the best way to remove it. The sodium sulfite may be incorporated into the soap, or potassium sulfite may be put into liquid soap, which reduces the time required for removal of the stain. This method of washing the hands also serves as an indication of the removal of the free tetryl, for as long as there is free tetryl on the skin a purple color will show in the sodium sulfite solution.

The following preventive measures are recommended: 1. Freshly laundered coveralls should be provided daily for every worker exposed to tetryl. 2. Workers handling tetryl should wear (*a*) soft washable leather gloves fastened at the wrists so that the dust cannot fall into the gloves, (*b*) impervious sleeves fastened around the glove at the wrist and extending up to the axilla to protect the arms and (*c*) impervious aprons for the protection of the anterior surfaces of the body. 3. As compulsory shower baths after work are an important factor in the prevention of tetryl dermatitis, time at the company's expense should be allowed the workers

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for taking the baths. 4. Since the skin of the face is affected from touching it with soiled fingers and from irritation caused by the respirator touching the face, a protective preparation should be applied to it. Such an application should be of the invisible glove type reinforced by a powder to prevent it from being easily penetrated by sharp particles. The formula given in table 1 was found to give better protection than any other available. The shellac forms the film on the skin when the alcohol evaporates. In the film are embedded the solid ingredients for reinforcement. The perborate liberates oxygen when it is wetted. The oxygen tends to detoxify tetryl. The linseed oil plasticizes the shellac, and the carbitol permits the film to be removed after work by washing with water.

Fig. 2.—Tetryl dermatitis.

The water soluble type of invisible glove application also gives considerable protection. The formula given in table 2 incorporates it with a reinforcing powder.

Reliance for the prevention of tetryl dermatitis should not be placed on protective ointments alone. These should be used in conjunction with all the other preventive methods mentioned. All workers need not use all these protective measures. Those who have worked for a long time without getting dermatitis or those who have become nonreactive need not do any more than wear clean protective clothing and take shower baths after work. Only new workers and those who are sensitive to tetryl must observe all these preventive measures.

Systemic poisoning from tetryl is a disputed subject. While some cases have been reported, most authorities deny its occurrence.

Petrolatum inserted into the nostrils several times a day may prevent congestion of the nasal mucosa and nosebleed. The hair can be protected from the dyeing action of tetryl by wearing a close-fitting cap or hood.

TRINITROTOLUENE (TNT)

Trinitrotoluene, or TNT, is the most commonly used bursting charge. It is made by nitrating toluene to mononitrotoluene, nitrating this to dinitrotoluene and then nitrating this to trinitrotoluene. This is washed with hot water until there is no more acidity. Then the neutral trinitrotoluene, now in the form of an oily liquid, is run into crystallizing kettles and from there into graining kettles. It is then transported to where it is boxed with nonsparking tools. Workers with this explosive should wear shoes containing no nails.

Trinitrotoluene resembles light brown sugar. It is soluble in ether, acetone and alcohol but is insoluble in water. On entering a room in which the dust of this explosive is present one experiences a bitter taste.

Dermatitis from trinitrotoluene begins to occur at the operation in which the product is washed with hot water to neutralize the acid and occurs from there on at every stage of the manufacturing, packing and bomb and shell loading processes. Workers engaged in unloading the boxes at the plants where shells are loaded, those pouring the trinitrotoluene into the melting boxes, those pouring it into shells and bombs, those drilling holes in it in the shells to make room for the booster and those inserting it into primers are especially likely to become sensitized and show dermatitis after five or more days of exposure. The hands, wrists and forearms are most commonly affected (fig. 3), but the dermatitis is often found at points of friction, such as the collar line, the belt line and the ankles. A more or less generalized dermatitis may occur but is rare. The lesions on the palms are characteristic, resembling somewhat the deep-seated vesicles of a phytid. They are deeper seated and larger (pea sized) and are accompanied by considerable edema. The dorsa of the hands are also usually edematous, and even the forearms up to the elbows may be affected. In seven to fourteen days the inflammation usually subsides and the skin peels in large thick pieces from the palms, in smaller pieces from other parts, leaving new skin beneath. The lesions on other parts are not characteristic, consisting of papules and vesicles followed by flaky desquamation.

Trinitrotoluene stains the skin of the hands a light yellow and discolors the hair to a reddish blond.

It may be taken into the system through the respiratory and gastrointestinal tracts and may be absorbed through the skin to cause anemia, leukopenia and yellow atrophy of the liver. Workers exposed to it often show cyanosis, or "blue lip," a livid purple of the lips and blueness of the face. They should be examined periodically for changes in the blood and hepatic damage.

TABLE 1.—*Protective Preparation Against Tetryl Dermatitis*

	Parts
Shellac	13
Isopropyl alcohol	31
Linseed oil	4
Titanium oxide	12
Sodium perborate	13
Talcum	20
Carbitol (monoethyl ether of diethylene glycol)	3

TABLE 2.—*Water Soluble Application*

	Parts
Casein	20
Zinc oxide	20
Iron oxide	2
Water	58

The treatment of dermatitis caused by trinitrotoluene consists in the application of mild wet dressings such as boric acid solution and solution of aluminum acetate in the acute stages and the use of mild ointment such as boric acid ointment or zinc oxide ointment when the acute symptoms subside.

Workers with mild dermatitis should be treated while working in order to give them an opportunity to get

Fig. 3.—Trinitrotoluene dermatitis.

well on the job and become "hardened," as the majority do. While working, they should be given protective clothing in the form of dustproof sleeves and aprons, in addition to a daily change of clean coveralls, stockings and underclothes. Washable soft leather gloves with smooth seams should also be provided and cleaned daily. They should fit snugly at the wrists to prevent the entrance of the dust of trinitrotoluene, and the sleeves should be fastened over them at the wrists. All workers with this explosive should take cleansing showers after work, before leaving the factory, and they should wash their hands before their meals. A liquid soap containing 10 per cent potassium sulfite may be used.[1] This will give a purple color as long as free trinitrotoluene is on the skin. The Webster test will also show the presence of this substance on the clothes or the skin. It consists in dissolving 10 per cent sodium hydroxide in alcohol and applying a drop to the clothing. A purple color develops if trinitrotoluene is present.

All workers should be given the protective clothing advised in the foregoing paragraph. While ointments are not to be relied on to give as much protection as the measures recommended, if for some reason or other they must be used the type described for protection against tetryl is also the best for protection against trinitrotoluene.

1. Norwood, W. D.: Trinitrotoluene (TNT): Its Effective Removal from the Skin by a Special Liquid Soap, Indust. Med. **12**: 206-208 (April) 1943.

AMATOL AND AMMONAL

Amatol is a mixture of ammonium nitrate and trinitrotoluene. It is made by preheating ammonium nitrate and letting it mix with molten trinitrotoluene, usually in the proportion of 50 parts each or that of 80 parts ammonium nitrate to 20 parts of trinitrotoluene. The hazard, treatment and prevention of dermatitis are the same as for trinitrotoluene. Ammonal is a mixture of ammonium nitrate and powdered aluminum. Dermatitis from it is not as frequent as that from amatol.

AMMONIUM PICRATE (EXPLOSIVE D)

Ammonium picrate, or explosive D, is made by reacting a hot aqueous solution of picric acid with ammonia and crystallizing the ammonium picrate by cooling. In the form of the wet crystals it is taken to the dry house and dried by circulating warm air. It is then packed in waterproof boxes.

Ammonium picrate consists of orange colored needle shaped crystals. It is soluble in water, has a bitter taste and dyes the skin, hair and clothes of workers exposed to it. It is used as a bursting charge in armor piercing shells, into which it is loaded by pressing. Because it attacks metals, the inside of the shell is coated with a nonmetallic paint or varnish.

From the time it is in the wet crystal stage up to the time of loading the shells ammonium picrate causes sensitization dermatitis among workers exposed to it. Those handling the dry product are the ones most affected. The face is usually involved (fig. 4), especially around the mouth and the sides of the nose. There are edema, papules, vesicles and finally desquamation. "Hardening" occurs as described for tetryl and trinitrotoluene. The treatment and the preventive measures are the same as for tetryl and trinitrotoluene.

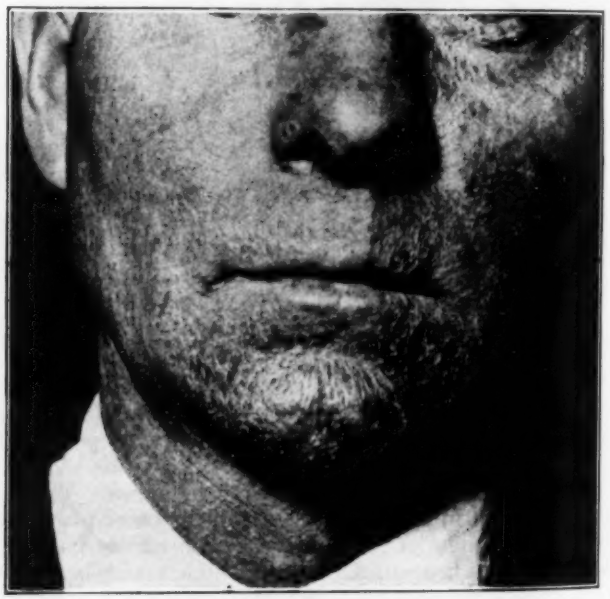

Fig. 4.—Ammonium picrate dermatitis.

PICRIC ACID

Picric acid, or trinitrophenol, can be made from benzene or from dinitrophenol. It is a lemon yellow crystalline solid, only slightly soluble in water but soluble in alcohol, benzene and other organic solvents. It stains the skin, the hair and the clothing of workers yellow. It has a bitter taste.

Picric acid causes dermatitis similar to that described under ammonium picrate.

MERCURY FULMINATE

Mercury fulminate is a brownish yellow heavy crystalline solid made by the action of alcohol on mercuric nitrate. There is but little dermatitis among workers engaged in its manufacture. It is used in detonators and primers and is one of the most frequent causes of dermatitis in shell loading plants. It causes sensitization dermatitis, and it can also cause ulcers if it enters

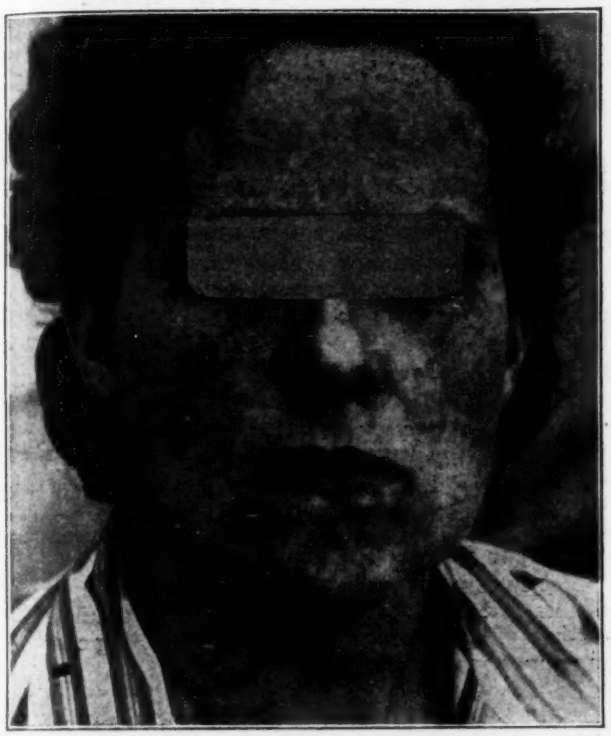

Fig. 5.—Mercury fulminate dermatitis.

abrasions. Because of its sensitivity, mercury fulminate is stored wet. Before use it is dried and delivered in small amounts to the detonator lines. It may be used to fill the detonators while it is still wet, and in this case the detonators are placed in drying rooms to dry.

When used for primers, mercury fulminate is mixed with other ingredients, such as antimony sulfide or potassium chlorate. In the making of detonators there is a certain amount of exposure to the dust in practically all of the operations, and most of the dermatitis from mercury fulminate occurs in a manufacture of detonators. In the making of primers the mercury fulminate is usually handled wet and the workers wear rubber gloves or finger cots.

Dermatitis from mercury fulminate occurs mostly on the face (fig. 5) and anterior surfaces of the arms, but other parts of the body may also be affected. If the wet primer mixture is dropped on the clothing, the powder when it dries will sift through the clothing to the skin and cause dermatitis on the covered parts of the body. The inhalation of the dust of mercury fulminate causes nasal irritation. Rubbing the nose with soiled hands or gloves is often the means of carrying the chemical to the face. Conjunctivitis also occurs in a considerable number of these workers.

In occupational dermatitis the etiologic role of the other ingredients in primers and detonators must not be overlooked; and if it is desired to find the actual cause of dermatitis among workers, patch tests should be performed with the various ingredients in the explosive mixtures. Petrolatum inserted into the nostrils will afford protection from nasal irritation, as described under tetryl.

HEXITE

Hexite, or hexanitrodiphenylamine, is a yellow crystalline solid, soluble in alcohol and in acetone. It is manufactured from dinitrochlorobenzene, and it causes vesicular dermatitis of the hands followed by desquamation, similar to that described under trinitrotoluene, among workers engaged in its manufacture and among those engaged in loading it into shells and bombs.

Hexite is now being made and used but not in as large quantities as trinitrotoluene. The incidence of dermatitis from it is higher than that from trinitrotoluene. It causes irritation of the mucous membranes of the nose and the mouth, and it stains the skin and the hair yellow. It also causes systemic poisoning similar to that caused by nitroglycerin.

PENTAERYTHRATOLTETRANITRATE (PETN)

Pentaerythratoltetranitrate, or PETN, a new explosive is used as a bursting charge. Dermatitis or systemic poisoning has not yet been reported as being caused by it.

BLACK POWDER AND SMOKELESS POWDER

Black powder was the first propellant, and until 1870 it was practically the only propellant used. Today, however, it is used only for igniter charges, for expelling charges from shrapnel, for primers and in the manufacture of fuses. Black powder is a mixture of potassium or sodium nitrate, charcoal and sulfur. It is only a rare cause of dermatitis.

Smokeless powder has entirely displaced black powder as a military propellant. It is manufactured by nitrating cotton with a mixture of nitric and sulfuric acid, purifying the pyrocotton, mixing it with ether and alcohol and pressing it into a colloid, called "cheese," pressing the colloid through openings into macaroni shape, cutting it into suitable sizes, drying and blending. Diphenylamine and graphite are added as stabilizers. There are some double base powders, which contain nitroglycerin.

Dermatitis from smokeless powder is rare. Workers operating dehydrating presses are exposed to fumes of ether and alcohol, and dilatation of the blood vessels of the face has been observed in those whose exposure has extended over a number of years. Workers with double base powder sometimes complain of headaches as the result of the systemic effects of nitroglycerine. The wearing of rubber or washable leather gloves will reduce the cutaneous absorption of nitroglycerin and help to prevent systemic effects.

LEAD STYPHNATE, SENSOL AND LEAD AZIDE

Lead styphnate is a reddish brown powder used in priming mixtures. It is manufactured by reacting resorcin with sulfuric acid and then nitrating to form trinitroresorcinol. This is then mixed with magnesium oxide and reacted with a solution of lead nitrate. Lead styphnate turns the hair and skin yellow and causes dermatitis similar to that described under tetryl.

Sensol, a yellow powder, manufactured by the action of sodium nitrate on aminoguanadine sulfate, is also used in primer mixtures and causes dermatitis similar to that of tetryl.

Lead azide is manufactured by the action of lead nitrate on sodium azide. It is a highly sensitive explosive and is used in detonators and primers. It rarely causes dermatitis.

NITROGLYCERIN

Nitroglycerin is made by adding glycerin to a mixture of sulfuric and nitric acids. To make dynamite, wood cellulose, nitrates and infusorial kieselguhr are added to the liquid nitroglycerin. To make gelatin dynamite, nitrocotton is added to nitroglycerin. Nitroglycerin is sometimes added to smokeless powder (cordite) to give desired ballistic properties. It is also used as a propellant aid in firing trench mortars. Headache develops in workers with nitroglycerin when they are starting the week's work. In order to prevent this some of them carry a little of it in their hat bands. Nitroglycerin causes no dermatitis but can be absorbed through the skin and cause cardiovascular disease.

COMMENT

Dermatitis occurs fairly frequently among workers filling primer cups. These may contain mercury fulminate, lead sulfocyanide, antimony sulfide, potassium chlorate and trinitrotoluene. In most of these cases the trinitrotoluene has been found by patch tests to be the principal cause of the dermatitis. The palms are affected in a manner similar to that described under trinitrotoluene.

Dermatitis from the tracer mix, consisting principally of strontium compounds and resinate, occurs but rarely, and I have seen no cases of dermatitis from the igniter mix, which contains magnesium and barium peroxide.

Dermatitis occurs in workers engaged in the manufacture of fuses. These may contain tetryl, lead azide and mercury fulminate.

Boosters always consist of tetryl in the form of pellets or of powder.

DERMATITIS FROM CUTTING OILS, SOLVENTS AND DIELECTRICS, INCLUDING CHLORACNE

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The use of solvents and cutting oils is so widespread that it is not possible to inspect any large manufacturing plant without encountering some department where one or the other is used. All operations in which cutting tools are used are literally bathed in oil of one type or another. It is almost impossible under ordinary conditions and much more so under the pressure of war production for the workers to avoid intimate contact with either the solvents or the cutting oils used in their operations.

Dermatitis from cutting oils, especially those of the insoluble type, occurs more frequently than any other occupational disease of the skin. If its incidence could be decreased, one of the most vexing problems of the industrial physician would be solved.

The use of the dielectrics, especially the chlorinated hydrocarbons, is rapidly increasing. The latter give rise to a characteristic cutaneous eruption, known popularly as chloracne, which was first described in this country by Schwartz.[1] The early diagnosis of this condition and the knowledge of its possible occurrence in any industrial process is of great importance. Once the condition develops, it is very persistent and takes many weeks to cure, even after the exposure has been eliminated. Chloracne can be prevented almost entirely by the institution of proper preventive measures.

While it is true that at times dermatologists may not be entirely acquainted with the exact chemical entity which is responsible for an occupational dermatitis, they have in the last few years learned enough about the mechanism of the production of industrial dermatitis to institute proper preventive measures. This is especially true as far as the cutting oils and the solvents are concerned.

It is important to stress over and over again that proper preventive and protective measures can decrease the incidence of occupational dermatoses.

CUTTING OILS

Cutting oils not only are the most frequent causes of dermatitis among the workers with machine tools and metals but have been shown to give rise to more occupational dermatitis than any other agent. The cutaneous eruptions which they elicit are usually of the acneform group, but they sometimes cause allergic dermatitis as well. This is not due to the fact that they are the most potent producers of acne or to the fact that they contain substances having unusual sensitizing properties but to the fact that more workers are exposed to their action and fewer precautions are taken against their effects on the skin.

The cutting oils can be divided into two main groups, the insoluble and the soluble. Of the two, the insoluble cutting oils are most frequently the etiologic agents in cutting oil dermatitis.

The insoluble cutting oils vary in their composition according to the particular types of machining for which they are to be used. The formulas of these oils are rarely known by their users, since they are trade secrets. Essentially they consist of a large percentage of petroleum oil to which is added a small amount of animal and vegetable oil ("lard oils"), chlorine compounds, sulfur and an inhibitor to prevent deterioration of the fatty oil.

"Lard oils" were first used, but the oils derived from petroleum have been substituted, both because of their cheapness and because, unlike the vegetable or the animal oils, they do not become rancid. The mineral oils may be obtained from crudes of various types. The so-called lard oils, which are now added only in small amounts, may be oleic acid, fish oils, lard oils and vegetable oils. The inhibitors which are incorporated to prevent rancidity of the lard oils should not have the property of rusting iron and usually are phenolic amines.

The insoluble cutting oils are used chiefly as aids to help in the cutting operation. One of their chief functions is the reduction of adhesion between the chip and the tool face. According to Ernst and Merchant[2] a chemical reaction may take place between the cutting fluid and the freshly ruptured chip surface. It is important to bear this in mind, as the chemical compounds which are formed may act as a possible source for some of the dermatitis from the cutting oils. Apparently this possibility has not been previously considered.

The sulfur which is added gives somewhat different characteristics to the cutting oils than do the chlorine

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1. Schwartz, Louis: Dermatitis from Synthetic Resins and Waxes, Am. J. Pub. Health **26:** 586 (June) 1936.

2. Ernst, Hans, and Merchant, M. E.: Chip Formation, Friction and Finish, Cincinnati, Cincinnati Milking Machine Company, August 1940.

compounds. At low cutting speeds chlorinated fluids are more effective in reducing the friction between the tool and the tool face as compared with sulfurized fluids. Sulfurized fluids are more effective at high cutting speeds or under severe cutting conditions.

The insoluble cutting oils are usually sterile in spite of the high incidence of folliculitis that they produce. It is not necessary and in fact adds to the possibility of a cutaneous irritation when antiseptics are added because of the mistaken idea that the bacterial content of the cutting oils is the cause of the folliculitis.

The soluble cutting oils act mainly to cool the cutting tools. Lubrication is a secondary function. According to Schwartz [3] the main constituents of the soluble cutting oils are sulfonated mineral and fatty oils 60 to 95 per cent, soap 5 to 30 per cent and volatile contents 0 to 10 per cent. Inhibitors such as phenolic amines are added to prevent rancidity. The soluble cutting oils are diluted many times with water (5 to 100 or 1 to 100) before they are used.

It is the soluble cutting oils which have a high content of bacteria, many of them pathogens. However, folliculitis and infections and even contact dermatitis are relatively rare among workers exposed to them as compared with those exposed to the insoluble cutting oils. This can readily be understood when one considers how they are diluted before being used. Spolyar and Ferree [4] recently reported systemic effects from the hydrogen sulfide encountered in a cutting oil.

Dermatitis from Cutting Oils.—The cutting oils contain metal slivers which may cause small wounds. Often the worker will use old waste impregnated with the oil containing the metal particles to wipe his hands and thus cause wounds and scratches.

The petroleum oils may defat the skin. This is only slightly modified by their content of fatty oils. Just as in dermatitis due to solvents, especially in older persons with dry skins, the degreasing action may lead to drying and fissuring of the skin. Secondary infection may occur through the wounds and scratches.

Papillomas may be seen on the hands and arms of those exposed for many years to mineral oils and greases. These are small, flat, brownish verrucous lesions, usually seen on the backs of the hands.

Allergic eczema is relatively of infrequent occurrence. It may be due to idiosyncrasy for the animal or the vegetable oil, the inhibitors, such as the nitrobenzenes, cresols and phenols, or the other antiseptics which may be added. As has been pointed out previously, chemical compounds may be formed in the cutting operation by the interaction between the cutting tool, the face of the cut metal and the sulfur and chlorine compounds in the cutting oil. These chemical compounds may be factors in allergic dermatitis. The specific hypersensitivity can be demonstrated by means of the patch test. Not only may the dermatitis be aggravated by the use of harsh cleansers, but these themselves may often give rise to dermatitis.

The lesions most frequently seen after exposure to the cutting oils (usually the insoluble and rarely the soluble cutting oils) are folliculitis and comedos. The hairy portions of the arms and the anterior surfaces of the thighs are the sites of predilection. They are also seen on the backs of the hands and fingers and on the abdomen (figs. 1 and 2).

Fig. 1.—Dermatitis from insoluble cutting oils. The patient was an automatic screw machine operator (patient of Dr. L. W. Spolyar, Indiana State Board of Health).

3. Schwartz, Louis: Dermatitis from Cutting Oils, Pub. Health Rep. **56**: 1947 (Oct. 3) 1941.

4. Spolyar, W. L., and Ferree, J. W.: Some Occupational Diseases Associated with the War Production Program, J. Indiana M. A. **35**: 402 (Aug.) 1942.

The eruptions are especially prone to appear in hairy persons with a well developed pilosebaceous apparatus. Those areas of the body, such as the waist and the anterior parts of the thighs, which are exposed to intimate contact with oil soaked clothing, may also be affected.

Comedos may be seen occupying almost all the follicular openings on the forearms and the upper anterior surfaces of the thighs, with relatively little inflammatory reaction. Usually, however, there are interspersed papules, pustules and patchy areas of perifollicular erythema. The papules and pustules are usually perifollicular. When secondary infection occurs, abscesses or even carbuncles become evident.

The histologic nature of oil folliculitis was recently studied.[5] The process could be seen to consist of a stimulus to the formation of keratin leading to the formation of a keratogenous plug in the follicular opening (comedo formation) similar to that seen after irritation with coal tar, coal tar distillates, coal tar pitch and the chlorinated hydrocarbons. The lesions

Fig. 2.—Cutting oil dermatitis on thigh. Note the comedo formation. The patient was a safety glass worker in contact with petroleum oil (patient of Dr. Louis Schwartz, U. S. Public Health Service).

produced by the cutting oils usually begin as folliculitis, and the process is much more inflammatory and extends some distance into the skin surrounding the affected hair follicles. Even the sweat glands may be involved. No bacteria were demonstrated in the lesions.

For a long time it was thought that the inflammatory reaction caused by the cutting oils was due to their content of pathogenic bacteria. It has been shown time and again that the insoluble cutting oils with their high incidence of folliculitis are sterile while the soluble cutting oils which may contain bacteria rarely cause any inflammatory reactions. Secondary infection may occur, but the bacteria are not from the insoluble cutting oils; they find their entrance through the wounds and scratches from the metal slivers or the abrasions caused by friction of the clothing against the inflamed skin. The bacteria may originate from the clothing and even from the skin of the affected worker.

It seems clearly brought out both by the study of histologic sections from areas of oil folliculitis and by the bacterial examination of insoluble cutting oils that the inflammatory reaction which is produced by the oils is due to the presence of irritants in them. These irritants may be sulfur compounds, chlorine compounds, the inhibitors or other not as yet identified chemical substances in the insoluble cutting oils.

Schamberg[6] conducted exhaustive experiments with the insoluble cutting oils in an attempt to reproduce oil folliculitis in human subjects. According to his findings it was the organically combined hydrocarbon sulfonate which was mainly responsible for the irritation. This is substantiated by the well known fact that petroleum products which are not sulfurized, such as petrolatum, which is widely used as a dermal application, soothe rather than irritate. The formation of the comedo is due to the stimulation of keratin formation by the mineral oils acting on the cells lining the follicular openings. When in addition these oils contain solid chlorinated hydrocarbons, acneform lesions of the more cystic type such as will be described under chloracne may be seen associated with the folliculitis and comedo formation.

A discussion of the possible relationship between contact with some of the insoluble cutting oils and the elicitation of latent epidermophytids is beyond the scope of this paper. Biram[7] has called attention to this possibility. It is hoped that from the work now being done more light will be thrown on this possible relationship.

Prevention.—The following suggestions with a few changes to suit a particular problem can be used as the basis for an attempt to prevent almost any occupational dermatitis. The problem consists essentially in reducing to a minimum the contact between the worker and the irritant.

1. The machines should be kept as free from grease and dirt as possible by a daily cleansing. The oil should not be allowed to accumulate at the base of the machine or on the floor. In some manufacturing plants metal aprons are attached to the machines to prevent splashes of oil coming in contact with the workers or reaching the floor. The oil should be changed at least once a week. If it is to be reused it should be filtered to remove metal slivers. Instead of adding antiseptics which increase the hazard of dermatitis, sterilization can be employed, but this applies only to the soluble cutting oils. The rancidity can be removed by neutralization. It must be borne in mind, however, that a number of the chemical compounds which are formed in the oil by the cutting operation or which are due to sulfurization or to the addition of chlorinated hydrocarbons cannot be removed by reprocessing or cleaning the oil.

2. Adequate washing facilities with hot and cold running water and shower baths should be provided. The use of the showers should be compulsory and supervised, and enough time should be allotted for their use. Clean towels should be given to the workers daily, and they should have free accesss to clean waste at the machines. Old waste with its content of metal slivers should be discarded. The dressing rooms should have two rows of lockers: one in which the street clothes are removed and the other preferably in a room which would be entered only through the showers for the work clothes. To guard against epidermophytosis,

5. Schwartz, Louis, and Peck, Samuel M.: Occupational Acne, New York State J. Med. **43**: 1711-1718 (Sept. 15) 1943.

6. Schamberg, J. F.: Causes of Skin Sores and Boils Among Metal Workers, Philadelphia, E. F. Houghton & Co., 1920.

7. Biram, J. H.: Prevention of Skin Rashes, Indust. Med. **12**: 208 (April) 1943.

wooden soled sandals should be worn to and from the showers. Proper antiseptic foot baths should also be provided.

3. Proper solid or liquid skin cleansers should be provided. For those workers whose skins become defatted and for those who have dermatitis, the neutral sulfonated skin cleanser advocated by Schwartz [8] should be used or a similar preparation. Schwartz has recommended the use of a neutral sulfonated castor oil to which 2 per cent of a synthetic wetting agent has been added. He has further suggested that for ordinary use the cleanser should consist of a neutral toilet soap plus a wetting agent or a synthetic detergent and a scrubber which softens or dissolves in water and does not clog the plumbing.

4. Clean work clothes should be provided daily for the workers and laundered by the plant.

5. To protect the exposed portions of the body, the workers should be provided with impervious sleeves, aprons and gloves made from one of the synthetic resin films. The sleeves should fasten over the gloves and be long enough to extend over the elbows.

6. Protective ointments are often used. They are not as efficacious as protective clothing and should be used only on those parts of the body, such as the face, which cannot be protected otherwise. The invisible glove type of protective ointment can be used, which leaves a film on the skin insoluble in oil but soluble in water, or a greasy ointment made of animal or vegetable fat, which fills up the pores and acts as a buffer between the skin and the cutting oil. In all such ointments a wetting agent should be incorporated to make them easily removable.[8]

Treatment.—The best treatment of dermatitis caused by cutting oils is the prevention of further contact with the cutting oils. When folliculitis and inflammation are present, wet dressings of 50 per cent alcohol, solution of aluminum acetate or solution of boric acid are helpful. The wet dressings can be applied to the arms and covered with one of the impervious sleeves suggested under prevention, and thus the worker can continue his occupation. Several times during the day he can visit the first aid room to have the wet dressings renewed. Thus no time is lost, and the worker actually receives better treatment than if he were to stay home. If an abscess or a carbuncle develops, surgical treatment is necessary. Unless there is definite secondary infection, the local use of the sulfonamides is not only unnecessary but often increases the dermatitis. For the defatted skins a soothing ointment, such as a cold cream, perhaps one containing hydrous wool fat or lecithin, or any good emollient cream rich in vegetable and animal fats can be used.

SOLVENTS

Dermatitis is a frequent occurrence among persons exposed to solvents. It frequently occurs among the users of solvents but is relatively rare among the workers who are engaged in their manufacture. This is due to the fact that the processes of their manufacture are almost entirely enclosed.

Among the solvents are included the organic liquids which are used as cleansers in degreasing operations of various kinds, also those used to extract oils, fats and wastes, the solvents for plastics, resins and rubber and those used to dissolve varnishes, paints and lacquers.

The organic solvents can be divided into the following groups:

1. Petroleum derivatives.
   (*a*) Pentane.
   (*b*) Petroleum ether.
   (*c*) Benzine in that portion of crude petroleum distilled below 150 C.
   (*d*) "Stoddard solvent," a petroleum distillate which boils between 150 and 200 C. It is popular as a degreasing agent.
   (*e*) Varsol, also popular as a degreasing agent.
   (*f*) Kerosene.
2. Coal tar derivatives.
   (*a*) Coal tar naphtha, or light oil. It is a complex compound containing phenols, aniline, toluidine, naphthalene, pyridine and other sulfur compounds.
   (*b*) Benzol (benzenes), the fraction which distills below 120 C. It is not pure benzene (C_6H_6) but consists mainly of benzene and toluene with small amounts of carbon disulfide and hydrocarbons.
   (*c*) Toluene (toluol) (C_7H_8). It is obtained from the fractional distillation of coal tar naphtha.
   (*d*) Xylene (xyol) (C_8H_{10}).
   (*e*) Light solvent naphtha.
   (*f*) Heavy solvent naphtha.
   (*g*) Tetralin (tetrahydronaphthalene) ($C_{10}H_{21}$).
   (*h*) Dekalin ($C_{10}H_{19}$).
3. Turpentine: Turpentine is derived chiefly from the resinous exudation of various species of pine and other Coniferae.
   (*a*) Gum turpentine, obtained by closed distillation of the oleoresin from the pine tree. The turpentine comes off, and the resin remains.
   (*b*) Russian turpentine, obtained by destructive distillation of wood.
   (*c*) American steam distilled turpentine, made from pine tree stumps. It contains 70 to 90 per cent of alpha beta pinene, about 10 per cent dipentene (inactive limonene) and a small amount of paramenthane.
   (*d*) Pine oil, a by-product of the steam distillation of turpentine. It consists of a mixture of higher alcohols.
   (*e*) Terpineol, spirit of resin, spirit of tar and oil of pine needles.
4. Alcohols.
   (*a*) Methyl alcohol (CH_3OH), or wood alcohol.
   (*b*) Ethyl alcohol (C_2H_5OH). This is usually denatured for commercial use by the addition of naphtha, acetone or zinc sulfocarbolate, all of which render it unfit to drink.
   (*c*) The higher alcohols, such as butyl, amyl and propyl.
5. Chlorine derivatives.
   (*a*) Chloroform.
   (*b*) Carbon tetrachloride (CCl_4).
   (*c*) Dichloroethylene ($C_2H_2Cl_2$).
   (*d*) Trichloroethylene (C_2HCl_3).
   (*e*) Perchloroethylene (C_2Cl_4).
   (*f*) Tetrachloroethane ($C_2H_2Cl_4$).
   (*g*) Monochlorobenzene, dichlorobenzene.
6. Esters.
   Methyl, ethyl, butyl and amyl acetate and derivatives.
7. Glycols.
   Ethylene glycol and diethylene glycol.
8. Carbon disulfide (CS_2).
9. Ketones. Acetone, methyl ethyl ketone, methyl acetone.

According to Schwartz,[9] about 3 per cent of 6,000 cases of occupational dermatoses reported were found among painters. Paint consists essentially of a pigment in a drying oil, to which lead, manganese or cobalt

8. Schwartz, Louis: Protective Ointments and Industrial Cleansers, M. Clin. North America **26**: 1195 (July) 1942.

9. Schwartz, Louis: Skin Hazards in American Industry: III. Public Health Bulletin 249, United States Treasury Department, Public Health Service, 1939, pp. 33-42.

is added to hasten the drying. Thinners are added to the paint both to allow for easier application and to hold in solution the oils and resins which paint contains. Turpentine, gasoline, naphtha, petroleum ether, mineral spirits, benzene and toluene are among the thinners used. The largest percentage of cases of dermatosis caused by paint is due to these thinners.

The solvents frequently encountered in the war industries are the dopes used in spraying the wings and the control parts of planes. The dopes consist of a solution of cellulose nitrate or acetate in a volatile solvent such as acetone or amyl acetate. As these evaporate they leave the resin on the fabric. Dermatitis frequently results from contact with the solvents in the dopes.

Another frequently occurring occupational dermatitis is found among workers engaged in degreasing small metal parts, for which the petroleum distillates, kerosene, varsol and others are used. In many industries large degreasing tanks are used which contain trichloroethylene. If proper protective measures are not used in these operations, not only dermatitis but systemic poisoning may occur.

Fig. 3.—Dermatitis as a result of daily contact with a solvent (diethylene chloride) (patient of Dr. Louis Schwartz, U. S. Public Health Service).

Solvent dermatitis is also not infrequently seen in the printing industry, especially among pressmen and compositors, from the action of turpentine, xylene, benzene and other petroleum distillates used in cleaning types and presses.

Clinical Characteristics.—The solvents exert their drying effect on the skin by removing the fats and oils. This results not only in dryness but in cracking of the skin which may eventually lead to a dry fissured appearance which is characteristic (fig. 3). Those most frequently affected are older persons who naturally have dry skins and in whom the natural fats and oils which are removed by the solvents are not easily replaced.

The hands, wrists and forearms are usually affected. In some patients not only the dorsa of the hands but the palms may show fissuring dryness and desquamation. Patients with thin dry skins may even have actual dissolution of the keratin layers, with erythema and vesiculation as a result.

Hypersensitivity may develop with the production of allergic dermatitis, which when it is acute shows typical erythema, papules and vesicules at all places of contact. In such cases cutaneous eruptions may be seen in other parts of the body, such as the legs and even the feet, which may have been in only slight contact with the solvent. Turpentine is a primary cutaneous irritant and will cause dermatitis if allowed to remain on the skin any length of time.

Most organic solvents are systemic poisons, and poisoning may occur as a result not only of inhalation but of absorption through the skin.

Diagnosis (a history of exposure).—A visit to the plant to inspect the process and to see to what the worker is exposed plus the observation of the characteristic dry fissured scaling dermatitis, especially when it involves the palms, are sufficient to make the diagnosis of solvent dermatitis. However, when the allergic type of eruption is seen, a positive diagnosis can be arrived at only by a patch test properly performed.

Since the solvents are primary irritants, they cannot be put on the skin as in the ordinary method of performing a patch test. They have to be diluted so that the final concentration used on the skin is known not to irritate the skin of normal persons. About 50 per cent of the solvent in corn oil can be used for the patch test.

Prevention.—To prevent the fumes of the volatile solvents from reaching the workers, hoods, suction devices and other mechanical means should be used. The suggestions for individual protection, however, must be followed to prevent dermatitis from the solvents.

Protective clothes made of synthetic rubber must be used, since rubber is attacked by many of the carbons of petroleum and by carbon disulfide also; gloves made from the polyvinyl alcohols can be substituted for those of synthetic rubber. Impervious sleeves which fasten over the gloves and reach over the elbow made from the same materials should also be worn. Aprons long enough to protect the body should, of course, be made from the same fabric.

As far as the rest of the clothing is concerned, including its laundering and other care, the rules laid down for the prevention of cutting oil dermatitis can be carried out.

As to cleanliness, because of the defatting action of the solvents on the skin, the suggestions made for washing and other cleansing measures under cutting oils may not be carried out in the same way. The workers should be taught not to use the solvents to clean off paints and other materials from their skins. Those who show the effects of the solvents on their skins must use safe cleansers, and the cleanser for dry skins previously recommended should be used. As has been stated previously, after washing an emollient like that mentioned under cutting oils should be rubbed into the skin.

DIELECTRICS CAUSING CHLORACNE

The increasing use of dielectrics in insulating wires and condensers, especially chloro compounds, has increased the incidence of the so-called chloracne. These compounds are important dielectrics or insulators because they are heat resistant, flameproof and waterproof. The chloronaphthalenes, the chlorodiphenyls and the chlorodiphenyloxides are especially prone to cause occupational acne. The solid chlorobenzols and the solid chlorophenols are also potent acne producers. Nearly every worker who is sufficiently exposed to these compounds for a few months will have chloracne. Even members of the immediate family who come in contact with work clothes soiled with these chloro compounds have been known to acquire these acneform lesions. The term "chloracne" is a misnomer.

Chlorine itself does not cause occupational acne either by contact or by oral administration. Neither the solvent chlorinated hydrocarbons nor naphthalene, benzene, diphenyl or phenol have caused acneform eruptions. Only the highly viscous or the amorphous solid chlorinated hydrocarbons cause acneform lesions.

The solid chloronaphthalenes are made by substitution of chlorine for the hydrogen in the naphthalenes. Any number of the hydrogen atoms may be replaced. Those most frequently used as dielectrics are the trichloronaphthalenes. Usually these are combined with the chlorodiphenyls (sold under the trade name Halowax). Not all compounds sold as Halowax necessarily consist of the chlorinated hydrocarbons.

Chlorodiphenoloxide is a semisolid compound made by chlorinating diphenoloxide. The chloronaphthalenes and chlorodiphenols not only cause lesions of the skin but give rise to acute yellow atrophy of the liver. While the acne caused by them has been known abroad for some time, the systemic effect was first pointed out by Schwartz in 1935.[10]

Recently because of the pressure of war work an increasing incidence of acne-like lesions has been reported among electricians installing cables on ships. It was found that cables were coated with chloronaphthalenes and chlorodiphenyls (halowax). The acne was found usually in electricians engaged in "stripping" the coated cables; the halowax was impregnated into asbestos which was wrapped around the wires as insulation.

In shipyards visited by Schwartz[11] it was found that only those exposed continuously for relatively long periods to cables from which the halowax containing the chlorinated hydrocarbons flaked off easily were affected with the acne. He did not see any cases of yellow atrophy of the liver. Workers exposed to the fumes of halowax also had acneform lesions.

Clinical Characteristics of Chloracne.—The lesions of chloracne consist of pinhead to pea sized or even larger pale straw colored cysts. Comedos are present but are not a striking feature. The cysts are located on the face and the lobes of the ears, behind the ears, on the back of the neck, the shoulders, the abdomen, particularly around the umbilicus, and on the thighs and even on the scrotum and the shaft of the penis (fig. 4). Everywhere that the fumes or the clothing soiled with the chlorinated hydrocarbons might come in contact with the skin is an area of predilection. The individual lesions increase in size for a few months and then remain stationary. They may still be present months or even years after exposure has been eliminated.

Systemic absorption does not seem to be the cause of the lesions. This is suggested by the fact that they occur on exposed parts of the body or those intimately in contact with soiled clothing. Even experimental local reproduction of the chloracne has been accomplished by long continued local application of these acne producing substances.[12]

10. Drinker, Cecil: Certain Chlorinated Hydrocarbons, in Symposium held at Harvard University School of Public Health, Boston, June 30, 1937. Fulton, W. B., and Mathews, J. L.: Dermatological and Systemic Effects of Exposure to Hexachlornaphthalene and Chlordiphenyl, Special Bulletin 43, Pennsylvania Department of Labor and Industry, pp. 1-15. Myer, May R., and Silverberg, Mabel G.: Skin Conditions Resulting from Exposure to Certain Chlorinated Hydrocarbons, J. Indust. Hyg. & Toxicol. **20**: 244 (March) 1938. Jones, J. W., and Alden, H. S.: Acneform Dermatergosis, Arch. Dermat. & Syph. **33**: 1022 (June) 1936. Morris, G. E., and Tabershaw, I. R.: "Cable Rash": Note on a New Cleansing Mixture, J. A. M. A. **121**: 192 (Jan. 16) 1943.

11. Schwartz, Louis: An Outbreak of Halowax Acne ("Cable Rash") Among Electricians, J. A. M. A. **122**: 158 (May 15) 1943.

12. Nakauchi, Y.: Acneform Lesions, Jap. J. Dermat. & Urol. **48**: 87 (Oct.) 1940. Schwartz, Louis: Personal communication to the author.

The lesions are due to chloro compounds deposited as fine particles or condensations on the skin from the fumes and from solution. They plug the orifices of the pores and by their keratogenous action cause the formation of comedos. This in turn gives rise to cysts by a combination of mechanical plugging of the mouths of the glands plus actual keratinization of their walls.

This is well brought out in microscopic studies of the lesions[13] in sections of characteristic straw colored cysts. Large cysts can be seen with very thin walls filled with keratinous material but little sebaceous matter. Associated with such cysts are the wide follicular openings filled with keratin plugs and having hyperplastic follicular walls. Cocci are not evident in the comedos. Just as in acne vulgaris, a foreign body granuloma may occur due to rupture of a cyst wall and contact of the sebum with the collagen.

Fig. 4.—Chloracne from halowax (patient of Dr. Louis Schwartz, U. S. Public Health Service).

Coal tar pitch is sometimes used as an insulating material. It may also cause acneform lesions, but the lesions can be differentiated from chloracne by the accompanying melanosis and the presence of comedos rather than cysts as prominent features.

Acne due to the chlorinated hydrocarbons can be differentiated from acne vulgaris by the history of exposure, by the occurrence at any age, by the distribution on areas of the body where acne vulgaris is usually not seen, such as the abdomen, the back of the neck and even the forearms, by the much less inflammation as compared with acne vulgaris, sometimes by the dryness of the skin, by the fact that comedos are not a predominant feature, by the persistence of the lesions and by the much greater amount of keratinous material contained in the cysts. Cocci are easily demonstrated in the comedos of acne vulgaris, while they are not seen in those due to the chlorinated hydrocarbons.

13. Drinker,[10] Schwartz and Peck.[5]

Prevention.—1. Workers engaged in stripping the cables should wear hood respirators containing proper filters. Where hoods cannot be worn, proper ventilation should be installed to remove fumes and dust.

2. The exposed parts, such as the face, should be covered with protective ointments of the invisible glove type reinforced with inert powders. Clean coveralls should be supplied daily and must be laundered by the plant or the shipyard. It is important that the underclothes should be cleaned daily also.

3. Adequate washing facilities should be provided, and taking showers at the end of the working day should be compulsory. Workers should be instructed to wash their hands thoroughly before eating lunch, and no smoking should be allowed without similar precautions being taken. The soap furnished the workers should preferably contain one of the synthetic wetting agents, such as one of the duponols (a group of higher aliphatic alcohol sulfates and derivatives of them) or santamerse (alkylated argylsulfonate), which will remove soil more easily than ordinary soap.

Treatment.—The only way to remove the cysts is by manual expression. Keratolytic local applications are not sufficient to remove them. In most cases use of x-rays is not indicated, because the patients have dry skins and it is not a question of reducing the activity of the sebaceous glands as it is in acne vulgaris.

DERMATOPHYTOSIS AND OCCUPATIONAL DERMATITIS

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One hundred years ago ridicule blasted the researches of Gruby, the founder of medical mycology. Fifty years later the discovery of bacteria overshadowed a brilliant revival by Sabouraud, who established a clinical differentiation of dermatophytes which still endures. New interest after World War I brought forth such a surge of literature on this subject that the old waste basket of dermatology, eczema, was replaced by the catch-all labeled fungous infections. Endemics of ringworm encouraged laboratory studies, and the finding of a threadlike strand or a small round body in a scraping or a filamentous growth on a culture medium was sufficient to assure the dermatologist that a cutaneous outbreak was a fungous disease. Molds and yeasts assumed a new role. Koch's laws were disregarded, and investigators attached their names to previously known fungi merely because change of medium, single spore transplant or environment had produced a change in color or a difference in the shape or the size of the spores; the nomenclature became so confused that medical mycology was again threatened with discredit.

The study of fungi is confusing because so little is known about the life cycles of the fungi that it is impossible to place them in a proper classification. They belong to the plant kingdom, which is divided into four groups: the thalluses, the mosses, the ferns and the seed plants. Thalluses are divided into algae and fungi, according to the presence or the absence of chlorophyll. All algae contain chlorophyll and are therefore free living, while fungi lack this substance and become parasitic, living on other organisms, or saprophytic, living on dead remains of other organisms. In man fungi live on dead tissue, i. e., the horny layer of the skin. They are classified according to the method of producing spores. These may be either sexual (perfect) or nonsexual (imperfect). The imperfect group includes many important organisms: the various molds of bread and cheese, plant pathogens, mildews that rot cloth and those fungi that cause disease in man.

Mycotic diseases of man may be superficial or deep seated. The superficial infections, or dermatomycoses, are due to the dermatophytes, which may be classified as Microsporon, Epidermophyton, Trichophyton and Monilia. The deep seated infections are due to Actinomyces, Sporotrichum, Blastomyces, Coccidioides and Phialophora. Any of these might cause primary fungous infections in those who till the soil or who contact plants, hay, straw, animals or their by-products, feathers, silk, wool and leather. When fungi are regularly found in an occupational contact, it is reasonable to assume that the worker suffering from infection with organisms peculiar to his work has an occupational disease.

Those exposed to the superficial infections are those who tend and care for pets; they acquire microsporosis. Even clerks are not exempt—a small group of girls selling shoes were reputed infected by Achorion quinckeanum from mice who infested the shop.[1] Swimming pool and bath house attendants and workers employed in plants equipped with public showers may acquire epidermophytosis. Dairy men and herders may suffer from trichophytosis due to an ectothrix. Bakers, preserve packers, fruit handlers and dishwashers show yeastlike organisms resembling Monilia. The deep-seated infections are usually found in tillers of the soil, cattlemen, florists, horticulturists, wood handlers and research workers.

CLASSIFICATION

The superficial lesions may appear as the polygonal or ringed scaly patches of microsporosis or the macerated, vesicular, hyperkeratotic types seen after infection of the glabrous skin by Epidermophyton and Trichophyton or the severe inflammatory nodular reactions produced by the ectothrix or seen in trichophytosis. Dermal moniliasis is found in the flexural folds of those whose skin is constantly wet, as the skin between the fingers of dishwashers and salad makers (erosio interdigitale), in the periungual skin of fruit canners, on the feet of workers in sewers or laundries. A glossy, livid red, oozing cutaneous surface or a peculiar, sharply defined paronychial swelling suggests a yeast infection.

The deep-seated infections are essentially granulomatous reactions. Sporotrichosis starts as an ulcer at the site of the prick of a plant barb; later cutaneous and subcutaneous nodules appear. The lumpy, boggy jaw of the farmer suggests actinomycosis. The laborer's swollen foot showing nodules and sinus formation prompts one to look for granules of gray, red or black fungi. The discharge from the indolent ulceration of the agriculturist recently migrated from California may disclose the double contoured Coccidioides, or a biopsy specimen from a crusted warty growth in a paper mill employee may yield the characteristic budding cell of Blastomyces.

Industrial physicians should know not only the fungi to which the worker is exposed but also those peculiar

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1. Polano, M. K.: Epidemic of Mouse Favus at The Hague, Nederl. tijdschr. v. geneesk. **82**: 2114 (April 30) 1938.

to his previous occupation and make cultures or perform a biopsy when indicated. Primary fungous infections are easily discovered, but proving that they occurred in the course of a worker's employment may be difficult. They vary according to location. In Massachusetts they are rare.

The dermatologist trained to be cognizant of occupational exposures and of compensation legislation has little difficulty with the status of mycotic infections. Difficulties arise only when a worker presents a sharply defined patch of dermatitis which is diagnosed as dermatophytosis by an industrial physician or an inexperienced dermatologist. Then the insurer, the commissioner and, in these days of high wages, even the patient must be shown by careful explanation of the contacts, the patch tests, the laboratory studies and the removal from exposure with resulting cure that the dermatitis was an industrial dermatitis. Persistent eruptions on the hands are frequently said to be fungous infections. Ayres and Anderson [2] after sixteen years' careful study of inflammatory eruptions of the hands stated "Without confirmatory evidence or dermatological experience a diagnosis of fungous infection of the hands stands an 88 per cent chance of being wrong. Even with a great deal of dermatological experience a positive diagnosis of fungous infection of the hands is very difficult without laboratory evidence." Comparing the reported tremendous incidence of fungous infection in California [3] with the incidence in Massachusetts, I do not hesitate to state that unproved diagnoses of fungous infections of the hands alone in Massachusetts would be almost 95 per cent wrong.

FUNGI AS SECONDARY INVADERS

One frequently hears or reads that an industrial dermatitis persists because of secondary infection with fungi. Direct microscopic or cultural proof is rarely presented. The hands and feet of 406 patients with contact dermatitis persistent for three months or more were examined by trained mycologists working under my supervision. Direct microscopic examination of scrapings showed fungous infection of the hands of 5, and cultures showed fungous growths from the hands of 2, both methods demonstrating Monilia albicans. Trichophyton was demonstrated in material from the feet of 3 patients, and M. albicans in material from the feet of 4. Dermatophytes do not find the site of active inflammatory industrial dermatitis a suitable terrain for growth; the secondary invaders are pyogenic bacteria. A person suffering from a contact dermatitis is no more subject to mycotic infection than one with normal skin. Fungi pathogenic to man are not found on all normal skins; careful mycologic studies on 100 persons revealed a pathogen on the skin of only 2 per cent, namely Trichophyton, on the skin of 2; not 1 person was found infected with M. albicans.[4] Certain types of molds and yeastlike bodies have been found persistently in certain occupational rashes due to the presence of these organisms in the contacts, but that does not prove that these saprophytes are the pathogens. For example, workers picking or packing fruits or vegetables suffer eruptions due to the irritating action on the skin of the fruit, the juice and moisture, with resulting maceration of the interdigital and paronychial tissue. This dead tissue maintains these saprophytes, but they are not necessarily the causative factors of the original eruption. Mechanical irritation from molds may occur also among those handling dried fruits and among gatherers of crops such as sugar cane, stalk, straw, hay and raw cotton. A growth of Aspergillus may be found on the skin of various parts of the body, even in the nose and the ears. True pathogens, such as M. albicans, Trichophyton and Epidermophyton, are seldom found as secondary invaders of the sites of occupational dermatitis.

SENSITIZATION

The role of cutaneous sensitization resulting from a primary focus of fungous infection is well established. Williams [5] demonstrated that lesions of the hands may result from dissemination of fungi or their products. These lesions he called dermatophytids. It has been proved that these may result in the ordinary course of the disease or may be precipitated by local irritation of the original focus by therapy, friction or injury or by intradermal injection of a biologic product such as trichophytin. The "ids" are symmetrical, and careful research has failed to demonstrate fungi in them. The patients show multiple hypersensitivity to exogenous and endogenous factors.[6] The mere presence of these lesions on the hands produces sites of lowered resistance sufficient to break the skin and allow the mechanical and the chemical contacts of industry to aggravate the original eruption. In many cases of so-called occupational cutaneous dermatitis the lesions are merely aggravations of previous mycotic infections. Sensitization due to distant fungous infection such as that on the feet may be an important factor in the precipitation of certain types of local reactions. Several excellent studies have been made on this type of complication in industry.

Kammer and Callahan [7] concluded that there probably was an interrelationship between dermatitis from contact with torch oil and the existence of a focus of superficial fungous disease, because this type of dermatitis was not seen in workers who did not have interdigital epidermomycosis of the feet. Fungi were recovered from lesions of the hands of 2 of 22 patients with torch oil dermatitis. "The clinical course of the affliction closely simulates fungous disease, and therapeutic measures ordinarily employed in the treatment of epidermomycosis are of unusual value in torch oil dermatitis." However, their final conclusion is "The demonstration of a focus of fungous disease is not enough to warrant the incrimination of that infection in the development of an industrial dermatosis. Such foci probably exist almost universally among laborers at the present time." While I do not agree with the authors in regard to the last sentence, still in a plant with shower bath facilities fungi may spread and involve most of the workers. One must not put too much reliance on patch tests with torch oil. I believe that with sufficient exposure torch oil acts as a primary irritant; 4 controls who had no dermatitis were patch tested, and all gave a 3 or 4 plus reaction. A primary irritant does not need a predisposing factor

2. Ayres, S., Jr., and Anderson, N. P.: So-Called Fungus Infections of the Hand, California & West. Med. **56**: 63 (Feb.) 1942.
3. Legge, R. T.; Bonar, L. and Templeton, H. J.: Incidence of Foot Ringworm Among College Students, J. A. M. A. **93**: 170 (July 20) 1929.
4. Downing, J. G.: Investigation of the Fungous Flora of Apparently Normal Skins, Arch. Dermat. & Syph. **35**: 1087 (June) 1937.
5. Williams, C. M.: The Diagnosis of Some Eruptions on the Hands and Feet, Arch. Dermat. & Syph. **5**: 161 (Feb.) 1922.
6. Stokes, J. H., and Kulchar, G. V.: The Infection-Allergic Complex in Arsphenamine Dermatitic Reaction, with Special Reference to Dermatophytosis, Brit. J. Dermat. **46**: 134 (March) 1934.
7. Kammer, A. G., and Callahan, R. H.: Torch Oil Dermatitis: Its Relation to Epidermomycosis, J. A. M. A. **109**: 1511 (Nov. 6) 1937.

despite the fact that these workers apparently were so predisposed. A history of lack of previous infection is not reliable, as the patient may fail to recognize a primary focus which is not bothersome.

Norwood and Evans [8] after investigating 20 cases of dermatitis occurring in workmen wearing for many hours daily leather gloves which were dipped in a solution of soap chips and glycerin came to the following conclusion: "The dermatitis has been shown to be caused by two factors: the traumatizing effect of the gloves; allergic sensitization of the hands due to the presence of dermatophytosis elsewhere. Clinical evidence of fungous disease of the feet was found in every case. Since dermatophytosis of the feet is almost universal among industrial workers, many of whom must wear leather gloves for protection, we believe that glove phytid will be recognized with great frequency." Constant contact with any form of soap may be a frequent cause of dermatitis.

The increasing number of cases of dermatitis occurring among plate printers prompted an investigation by Neal and Emmons [9] in a plant employing 1,091 workers. Extensive mycologic studies were done on 354 workers. The percentage of positive findings was as high among those unaffected as among those affected. They stressed the difficulties encountered in making a diagnosis of dermatophytosis from the clinical appearance; no dermatophytes were found by direct examination or by culture of material from the hands of any of the men with dermatitis. They concluded from their survey that among these workers the potential hazards for the skin were, first, direct factors—the mechanical friction, the abrasive and the drying action of the cleaning materials used on the plates and on the workers' own hands and the follicular plugging with ink; second, chemical factors—the inks, the solvents, the potassium carbonate and the soaps; third, infections—both fungous and bacterial. The indirect factors were the mechanical and the chemical agents mentioned, which may cause the hands of plate printers having dermatophytosis of the feet to become more susceptible to dermatophytid reaction and that it is possible that dermatophytosis of the feet may increase the plate printers' allergic susceptibility to the inks.

The aforementioned investigation might be compared with an unpublished study of dermatitis among tack makers which I made on two occasions, ably assisted by Dr. Louis Schwartz of the United States Public Health Service on the first occasion. In a tack factory in which about 300 workers were employed cases of dermatitis had occurred for the past eighteen years despite various studies and the installation of preventive and therapeutic measures. The cases of most serious and persistent dermatitis were among the skilled mechanics, the tack makers.

The tacks are made from sheet steel and brass which have been scaled by a weak solution of sulfuric acid, washed and then dipped into a solution of lime (calcium oxide), which remains as a white coating that acts as a lubricant for the cutting machines. These sheets are gaged, trimmed and cut into strips called tack plates, which are inserted into the automatic tack machine. The tack machine cuts a piece from the tack plate, drops this piece into a mold to be molded into the proper shape, passes it into another part of the machine which puts a head on the tack and then the finished tack is dropped from the machine. The tack makers are responsible for the proper operation of the machines; they must understand the working of every part and be able to clean, adjust and repair these machines. They are intelligent, well paid workers and will not stop work until it is absolutely necessary. They contact lime, kerosene, oil, grease, and suffer friction. Their hands become dry and fissured, and they have recurrent outbreaks of vesicles. Previous chemical analysis proved that the lime at this plant was 2.8 per cent stronger in total alkalinity than that used at a similar plant. Eighteen of 21 patients gave a positive reaction to the lime. Fifteen of these workers showed positive clinical evidence of dermatophytosis; 3 others showed no evidence of fungous infection but gave positive reactions to the lime. Extensive mycologic studies on the men, the machine oil and the grease revealed the usual bacteria, saprophytic yeasts and molds. Lime and dirty kerosene contained large numbers of spores of bacteria and hyphal fungi, showing that spores can remain viable in them and that they would be good mediums for holding and transmitting living spores. Direct examination of hands showed fragments or mosaic forms in 5 cases, not sufficient to be declared positive evidence for dermatophytosis. The feet of 12 workers gave positive findings and the feet of 3 positive cultures—Epidermophyton floccosum in the case of 1 and Trichophyton mentagraphytes in that of 2.

It was apparent that several factors were involved: the lime, the mechanical and the chemical effect of the cleaning and the repairing of the machines, the continued exposure after the dermatitis had developed, and in the majority of those affected the presence of fungous infection elsewhere. Most of these cases had a history of several years' duration. The installation of more of the hygienic facilities and practices recommended for both the plant and the employees plus the therapeutic measures generally employed in the treatment of dermatophytosis produced a temporary improvement. However, the lime was not changed and the other factors remained, so that these old cases still persisted and new ones appeared.

LEGAL ASPECTS

In Massachusetts a fungous infection of the skin is considered a disease and not compensable.[10] The act provides only for a personal injury arising out of or in the course of employment. Fungous infections occur irrespective of occupation. However, if a fungous infection can be shown to be a natural result of trauma originating at work or a secondary infection of the site of a previous industrial dermatitis, or if it can be demonstrated that the work aggravated a preexisting dermatomycosis that was a result of trauma or of the working conditions, the board recognizes these facts in its decision and finds that the dermatomycosis is a result of an injury resulting from the worker's employment. The decisions are reasonable and practical, and if there is no evidence that the work would aggravate the disease the patient has little support for his contention that such aggravation is present.

8. Norwood, W. D., and Evans, E. E.: Industrial Dermatitis from Gloves; Effect of Dermatophytosis (Ringworm); "Glove Phytids," J. A. M. A. **114**: 1523 (April 20) 1940.

9. Neal, P. A., and Emmons, C. W.: Dermatitis and Coexisting Fungous Infections Among Plate Workers, Public Health Bulletin 246, United States Treasury Department, Public Health Service, 1939.

10. Downing, J. G.: Analysis of Claims in Industrial Dermatoses, J. A. M. A. **111**: 1536 (Oct. 22) 1938.

In a former review of 2,000 cases 179 were deemed dermatophytosis and therefore not compensable.[11] These were disputed less than one would expect, for the patient is usually aware that the disease started on an unexposed area such as the feet, often knows or suspects the diagnosis, has had previous attacks, knows of no irritants in his work and is frequently seeking advice rather than compensation. Among 1,433 patients with industrial claims encountered in private practice from 1938 to 1942 there were only 142 (about 10 per cent) who showed any clinical evidence of fungous infection; the feet of all the patients, men and women, were examined, the men completely stripped, and the women when indicated. Interdigital maceration, onychomycosis, orange colored hyperkeratosis, vesicular lesions and scaling of folds of the skin were noted; scrapings and cultures were made in questionable cases. Fifty-one showed evidence on the feet alone; 31 more had lesions of the palms and of the lateral aspects of the fingers also; 9 showed scaly lesions on the body and on flexural folds, and 4 on the hands alone; 51 more had compensable aggravation or concomitant industrial dermatitis. Ninety-one persons were deemed to have lesions not related to occupation, most of them being clerks. However, even they may have had an attending industrial complication; for example, in 1 girl sensitized by her white gold ring dermatitis of the palm developed from contact with the nickel plated handle of her comptometer; in 2 other employes dermatitis developed from rubber fingercots, and in 1 employee, from the cream used to remove the ditto ink. The other cases were associated with occupations entailing wet work, friction, contact with solvents, detergents and cutting oils, the patients being bartenders, soda fountain clerks, printers, dyers, machinists and fruit and vegetable handlers. Two patients had aggravation of their dermatophytosis because their feet were constantly wet from insanitary plant conditions and 8 from superimposed trauma. Dermatophytosis is a disease of males; only 23 females were affected. Ninety, or 75 per cent, of the patients with dermatophytosis were American born; 78 were under 30 years of age; 62 were clerks, showing that it is predominantly a disease of the white collar class, those who get their exercise in gymnasiums or on golf courses. There were only 3 laborers.

As to deep-seated infections, biopsy specimens are of more value than scrapings and smears or cultures. Biologic extracts are of doubtful value. Previously it was thought that a negative reaction to trichophytin was valuable in that it ruled out fungous infection, but it has been shown that this test may be negative in the presence of active mycotic findings.[12] A careful history, knowledge of occupational exposures, patch tests and trained clinical observations are the main essentials for diagnosis.

DIFFERENTIAL DIAGNOSIS

It is the superficial fungous infections of the hands that cause confusion. Therefore a discussion of various disturbances of the hands might be in order. Dermatophytids appear spontaneously and are pinhead size vesicles with thick walls. They are symmetrically placed on the lateral aspects of the fingers and on thenar and hypothenar eminences; occasionally they involve the entire palm, rarely the dorsum of the hand. Pustular psoriasis or a recalcitrant vesicular eruption of the palms is so rare that it is usually thought of only because of its duration. Contact dermatitis shows usually areas of erythema, scaling, thin walled vesicles, papules and wheals, an ill defined eruption rarely symmetrical, usually involving the dorsa and starting on one area and spreading slowly or rapidly. Bacterial infections follow previous dermatitis or trauma and are indolent, pustular and crusted. The avalanches of mycology almost removed the names "cheiropompholyx" and "dyshidrosis" from dermatology, but the entity composed of deep-seated sago grain-like vesicles, appearing suddenly and disappearing with or without treatment, has regained recognition.

A peculiar eruption appearing on the dorsa of the hands and the anterolateral aspects of the extremities is beginning to be recognized by industrialists because of its resistance to treatment and because it is so commonly mistaken for industrial dermatitis. The lesions start as a group of vesicles rapidly becoming a brilliant red elevated circular oozing patch which involutes by clearing in the center, extending peripherally until healing occurs, or the patches persist and enlarge until they may involve 5 or 6 inches of the arm or the entire dorsum of the hand. This disease has been called nummular eczema, eczema parasitica or orbicular eczema.

PRESCRIPTION 1.—*Soothing Salves*

	Gm. or Cc.
Zinc oxide	2
Cornstarch	10
Petrolatum to make	30
or	
Solution of aluminum acetate	10
Hydrous wool fat	20
Paste of zinc oxide	30

PRESCRIPTION 2.—*Stimulating Applications*

	Gm.
Juniper tar	2
Zinc oxide ointment	30
or	
Crude coal tar	2
Zinc oxide	2
Cornstarch	15
Petrolatum	15

TREATMENT

The sulfonamide compounds have no place in the treatment of uncomplicated industrial dermatitis. There is no proof of their being of value for fungous disease. To date I have seen over 300 serious cutaneous reactions from their use, oral or local, the majority being from their use in an ointment base. When a patient with an occupational dermatitis is referred by an insurer for treatment and has a fungous infection also, it is advisable to institute treatment for both disturbances in order to clear up the former. Usually the treatment may be complicated, but as these patients are unable to work they have the time necessary for the care of their skin. If the eruption is vesicular, wet dressings of solution of boric acid or solution of aluminum acetate are prescribed for the first twenty-four hours for the hands and arms, while the feet may be soaked in a solution of potassium permanganate 1:5,000. If there is evidence of infection on the hand, the solution of

11. Downing, J. G.: Cutaneous Eruptions Among Industrial Workers, Arch. Dermat. & Syph. **29**: 12 (Jan.) 1939.
12. Tolmach, J. A., and Traub, E. F.: Epidermophytids and Trichophytin Reaction, Arch. Dermat. & Syph. **28**: 560 (Oct.) 1933.

potassium permanganate may be used in both areas. After forty-eight hours calamine lotion is applied, followed by a soothing salve, such as one of those given in prescription 1. Phenol or menthol may be added if there is pruritus. The patient should continue to apply wet dressings for half an hour twice a day. As the skin becomes dry, application of boric acid ointment may be indicated. After ten days to two weeks stimulation is needed in the form suggested in prescription 2.

When there is interdigital maceration or desquamation under the toes or the arch an ointment such as the one given in prescription 3 is applied morning and night, the excess removed and then a powder dusted over the skin, such as the one given in prescription 4. Menthol or camphor might be added if there is much pruritus. Isolated vesicular patches may be treated with alcoholic solution containing salicylic acid 5 per cent, iodine 2 per cent or thymol 5 per cent. Yeast infections respond best to dyes, such as gentian violet or triple dyes. The deep-seated infections call for iodides in large doses. The use of biologic extracts has been disappointing and may exacerbate the eruption. Roentgen radiation in doses of 75 roentgens every five days for six to eight treatments will relieve

PRESCRIPTION 3.—*Ointment for Desquamation*

	Gm.
Salicylic acid	2
Precipitated sulfur	2
Petrolatum	30

PRESCRIPTION 4.—*Dusting Powder*

	Gm.
Salicylic acid	0.6
Boric acid	40
Talc	120

many patients, provided the application of suitable topical remedies is continued. Roentgen radiation should be given only by a trained dermatologist.

Fungous infections do occur in occupation even though in certain localities they may be rare. Industrial physicians should be cognizant of them; at least they should know those endemic to the neighborhood of their workers. Mycotic infections are already problems in military camps. Previous to the last war such infections were endemic in various parts of the tropics. Hence it was brought by seasoned veterans to camps and later spread to various communities. For the past few years there has been a lull in its advance, but now with the regimentation of men in the armed forces and industry it is again assuming serious proportions. Physicians in industry should attempt to institute an effective program for the prophylaxis of fungous disease. Many may regard dermatophytosis as a trivial disease. However, a mycotic focus may be the port of entry for pyogenic organisms with resulting lymphangitis, adenitis, abscesses, erysipelatous eruptions, cellulitis and severe dermatitis resulting from medication or sensitivity produced by their presence and precipitated by industrial exposures. Fungous infections are serious, for they may interfere with the efficiency of our industrial all-out effort for victory.

520 Commonwealth Avenue.

VACCINATION AGAINST WHOOPING COUGH

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From the literature on pertussis vaccination it is difficult to attain an unbiased opinion as to the value of this prophylactic measure. On the one hand there are authors, like Sauer [1] and Silverthorne, who report excellent results; on the other hand there are those who have only negative or doubtful effects to report (Doull [2]).

Table 1, taken from a recent publication by Toomey,[3] is a survey of different publications on this subject.

All these reports have the same problem to face, which some authors try to solve, others not, namely the rate of exposure to infection after vaccination. In a community where whooping cough is always existent and flares up periodically, the rate of exposure among a great number of children must necessarily be difficult to grasp numerically. If the children are vaccinated between epidemics, months and years may pass before they are exposed to infection, and by that time the immunity once acquired may be greatly reduced or lost.

In Iceland conditions are different. Here whooping cough spreads as an epidemic all over the country, usually at intervals of about seven years, to die out completely when it has attacked practically all persons who either had not been born or had escaped exposure in former epidemics. This takes from six to twelve months, and then the disease is not seen for years in the whole country.

In Iceland the rate of exposure is therefore not such an uncertain factor as in the aforementioned reports, for it can be safely assumed that practically every child born since the last epidemic has not been in touch with whooping cough and will be exposed during the next epidemic.

Our difficulties are of another nature. When pertussis once is introduced, it spreads like a fire, and everybody wants to have his children vaccinated at once. Our problem is therefore to be able to produce a great quantity of vaccine in the shortest time possible and have the children vaccinated as soon as possible after the first case appears. The demand for vaccine is so enormous, when everybody wants vaccine at once, that we have several times lagged behind in the production, which under such conditions is so strained that infection in one bottle of a prepared suspension may mean a serious delay in the rapidity with which the immunization is carried out.

PRODUCTION OF VACCINE, STRENGTH AND DOSAGE

As soon as pertussis bacilli had been isolated from the first patient, who had doubtful clinical symptoms, production of vaccine was started. After forty-eight hours' incubation on Bordet's glycerin-potato-agar, containing 10 per cent human blood, the culture was

From the Department of Pathology and Bacteriology, University of Iceland, Reykjavik.

1. Sauer, L.: Present Status of Preventive Inoculations Against Whooping Cough, Am. J. Dis. Child. **54**: 979 (Nov.) 1937.
2. Doull, J. A., and others: Active Immunization Against Pertussis: Final Report on Cleveland Immunizations of 1934-1935, Am. J. Dis. Child. **58**: 691 (Oct.) 1939.
3. Toomey, J. A.: Active Immunity: Preventions Against Smallpox, Diphtheria, Whooping Cough, Tetanus and Typhoid, J. A. M. A. **119**: 18 (May 2) 1942.

controlled microscopically for pureness and also to ascertain that it was in phase 1, after which it was suspended in isotonic solution of sodium chloride with merthiolate in a dilution of 1:10,000. From a great number of culture dishes a suspension was made in one bottle, which was machine shaken at short intervals for twenty-four to forty-eight hours. After bacteriologic tests had proved the sterility of the suspension, it was standardized nephelometrically and dispensed in rubber-capped vials. All the vaccinations were done by the practitioners of the country.

Most authors recommend that the vaccine be standardized at 10,000 million organisms per cubic centimeter, and some have even recommended 20,000 million. In America such a vaccine has been administered at one or two week intervals, 1 to 3 cc. being injected at a time and this dose repeated five or six times. It has been claimed that 60,000 to 100,000 million organisms were required to afford sufficient immunity, and as is seen from the survey in table 1, most authors have given a total of 80,000 millions. With our limited facilities it would have been utterly impossible to carry out a general immunization along these lines. Only a small fraction of the children could

TABLE 1.—*Vaccinations Against Pertussis Reported by Different Authors*

(From Toomey)

Author	Year	Dose 1,000 Million per Cc.	Vaccinated No.	Vaccinated Exposed	Vaccinated Affected	Vaccinated Per Cent	Not Vaccinated No.	Not Vaccinated Exposed	Not Vaccinated Affected	Not Vaccinated Per Cent
Silverthorne...	1938	120	747	91	1	1	161	27	23	85
Kendrick.....	1939	80	1,815	415	52	13	2,397	508	348	69
Miller-Faber...	1939	80	211	29	9	31	182	32	29	96
Sauer.....	1939	80	2,453	...	32	..	1,730	...	286	..
Singer-Brooks.	1939	80	272	42	7	16	256	71	62	87
Doull et al.....	1936	80	483	...	61	..	466	...	71	..
Seigel et al.....	1937	80	101	17	9	52	110	47	22	46
MacLean.....	1939	16-20	513	46	0	0	154	115	189	77

have been vaccinated with such a great quantity of vaccine, and to decide which children should be immunized and which not would have led to severe and certainly not unfounded criticism.

We decided to standardize all vaccine at 8,000 million organisms per cubic centimeter and recommended four injections of this vaccine at intervals of four to seven days, beginning with 0.5 cc. followed by three injections of 1 cc. With this procedure each child would receive a total of 28,000 million organisms in the course of twelve to twenty days. This is a much shorter time than most authors recommend, but we had no alternative, for we knew that within a month the disease would be all over Reykjavik and spreading out into the country. As we wanted quick immunity we did not use aluminum hydroxide in our vaccine which certainly enhances the effect considerably; but, as it retards the absorbtion correspondingly, we thought it might have a slowing effect on the process of immunization and so omitted it, although we would not have hesitated to use alum precipitated vaccine if we had been able to spread the injections over a longer period.

Reactions from the vaccinations were negligible. A few children had a slight redness and even a perceptible swelling at the site of injection, but no major reaction was noted.

RESULTS

In order to obtain as reliable results as possible two of us (S. T. and H. Á.) visited the homes of the children who had been vaccinated. The mothers were usually found to be able to give reliable information, and sources of information which appeared to be unreliable (only a few) were omitted. Care was taken to ask questions in such a way as to avoid all kinds of suggestions in order to obtain as unbiased answers as possible. At the same time reports were taken of unvaccinated children for comparison as controls.

TABLE 2.—*Degree of Pertussis*

	Number	Per Cent
Unvaccinated controls		
No pertussis	6	4.9
Mild pertussis	60	49.2
Medium pertussis	42	24.4
Grave pertussis	14	11.5
	122	
Vaccinated children		
No pertussis	218	28.3
Mild pertussis	381	49.5
Medium pertussis	130	16.9
Grave pertussis	41	5.3
	770	

During this epidemic about 5,000 children were vaccinated in Reykjavik. Of these we were able to trace and obtain what was considered reliable reports on 888. Practically all these children were between 0 and 8 years old. Of this number 118 fell sick before vaccination was finished, which was considered to be one week after the fourth injection.

In the reports a distinction is made between mild, medium and grave pertussis. In this report "mild" means no paroxysms; "medium" five to ten attacks in twenty-four hours, and "grave" more than ten attacks in twenty-four hours or pneumonia.

Of the unvaccinated children 38, or 31 per cent, had fever for a shorter or longer period and only 160, or 20 per cent, of the vaccinated. The average duration of sickness among the unvaccinated controls was 9.8 weeks, but 8.1 weeks among the vaccinated. Pneumonia was noted in 4, or 3.3 per cent, of the controls and in 12, or 1.6 per cent, of the vaccinated group.

Partly Vaccinated Group.—Some children fell ill immediately after the first injection, others not until after the fourth injection had been given. Those who were affected within a week from the last injection are contained in this group, as they had evidently been infected long before vaccination was finished. As was to be expected, the results in this group fall in between the two others (table 3).

Thirty-three of these children, or 28 per cent, had fever. Pneumonia was noted in 6, or 5.1 per cent.

TABLE 3.—*Partly Vaccinated Children*

	Number	Per Cent
No pertussis	7	5.9
Mild pertussis	77	65.2
Medium pertussis	24	20.3
Grave pertussis	10	8.6
	118	

COMMENT

The results of our vaccinations show a difference of attack rate and a difference in the course and behavior of the disease which must be attributed to the vaccination. An epidemic of whooping cough always means a great increase in child mortality, and every means of combating it effectively must be welcomed. If we compare grave and medium pertussis among the vaccinated and controls we see that 46 per cent are subject to the disease, with more or less paroxysmatic

attacks among the unvaccinated but only 22 per cent among the vaccinated. The rate of fever and pneumonia is also lower among the vaccinated, although the duration of the disease is not much shortened (by 18 per cent), but this is difficult to determine, as is readily understood when it is remembered that spasmodic attacks may accompany catarrhal infections of various origins after recovery from the pertussis.

The results would in all probability have been better if we had not been compelled by the situation to employ a comparatively weak vaccine in the shortest possible time. But in spite of this disadvantage they indicate clearly that vaccination is of undoubted value as a prophylactic measure against whooping cough.

SUMMARY

Of 888 children between 0 and 8 years vaccinated against whooping cough, 28.3 per cent of 770 fully vaccinated got no pertussis, 49.5 per cent mild pertussis, 16.9 medium pertussis and 5.3 per cent grave pertussis. Of 122 unvaccinated controls the corresponding numbers were 4.9, 49.2, 34.4 and 11.5 per cent. Owing to special conditions in Iceland there could be no doubt about exposure after vaccination, as practically every child was exposed.

2 East 86th Street.

CONGENITAL CYSTIC DILATATION OF THE COMMON BILE DUCT WITH SEQUELAE

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This is a review of the literature, report of a case and subsequent examination after one year.

The many unusual features of the condition lead us to believe that the discussion and report of this case will be of help to others when confronted with a similar problem.

The rarity of the condition is attested by the fact that a complete review of the literature by Zinninger and Cash [1] revealed only 109 cases reported up to January 1932. Since their report was published, we have found cases reported by Swartley and Weeder,[2] Walton,[3] Weeder,[4] McWhorter,[5] Hamilton [6] and Poate.[7]

There is a striking fact that, of the cases reported, 80 per cent were present in the female and the greater percentage of all the cases was found in children.

ETIOLOGY

Nothing can be offered as to a definite cause of cystic dilatation of the common bile duct, although most authors consider it to be of congenital origin. The predominance of the condition in children and the anatomic structure of the common bile duct make one consider the similarity between this condition and congenital hypertrophic pyloric stenosis.

Cases have been reported in which definite anatomic anomalies were found to exist in or adjacent to the common bile duct, such as adenomas of the pancreas, pressure on the common duct due to enlarged tuberculous mesenteric glands, congenital weakness of the wall of the duct or congenital narrowing of the intraduodenal portion of the duct; also the presence of a fold over the mouth of the intraduodenal portion of the duct, which acts as a valve. Papilloma of the ampulla has been also reported. The great predominance of cases shows no abnormality except that of the common duct per se.

PATHOLOGY

It is interesting to note the similarity in the pathology of the reported cases. In all the reports there was a large, tense, spherical cystic tumor of the upper right quadrant of the abdomen just below the liver, which displaced the stomach to the left and the duodenum also to the left and down. This tumor mass at times was seen to be in front of and sometimes behind the duodenum but always retroperitoneal. It is interesting to note that the gallbladder was invariably normal in size or occasionally smaller than normal.

The size of the cysts reported varied tremendously. Heiliger reported a case in which the cyst measured 2.5 by 3 cm., while the largest reported by Reel and Burrell [8] contained 8 liters.

The wall of the cyst in all cases was definitely thickened, although the degree varied considerably. The wall in all cases was vascular and seemed to have a great amount of fibrous tissue present. It was noted on microscopic examinations that the presence of epithelium varied from being totally absent to cases in which it was scarcely present. "The rapid disintegration of the epithelium that lines the larger biliary passages is well known, and it is not unreasonable to suppose that this has been a factor in the large number of instances in which no epithelium was found."

The microscopic examination of the cyst wall showed it to be largely composed of connective tissue.

Zinninger and Cash reported that in only 1 case was the opening of the cyst into the duodenum demonstrated.

The characteristics of the distal end of the cyst are diversified. In 17 cases a valvelike fold was found at the outlet, with a similar fold also present over the mouth of the hepatic and cystic ducts. An abnormal course of the duct through the duodenum was frequently noted. In 11 reports there were one or more sharp kinks and in 13 there were present a narrowing or stenosis. Cases have been reported in which no opening was found entering the duodenum, while other authors reported that the opening from the cyst into the duodenum was demonstrated only at autopsy.

The contents of the cysts varied from those in which normal bile was found to those in which the fluid was definitely infected. No evidence of the presence of stones is noted in the literature.

The condition of the liver varied, depending on the duration, characteristics and degree of obstruction. The liver has been found to be deeply jaundiced, to be normal, to be enlarged; also where there was evidence of biliary cirrhosis or where interstitial hepatitis was found.

From the pediatric and surgical clinics of the Mercy Hospital, operated by the Sisters of Mercy, Baltimore.

1. Zinninger, M. M., and Cash, J. R.: Congenital Cystic Dilatation of the Common Bile Duct, Arch. Surg. **24**: 77 (Jan.) 1932.
2. Swartley, W. B., and Weeder, S. D.: Choledochus Cyst with a Double Common Bile Duct, Ann. Surg. **101**: 912 (March) 1935.
3. Walton, J.: Congenital Diverticulum of the Common Bile Duct, Brit. J. Surg. **27**: 295 (Oct.) 1939.
4. Weeder, S. D.: Choledochus Cyst with Double Common Bile Duct, Ann. Surg. **110**:55 (July) 1939.
5. McWhorter, G. L.: Clinical Use of a Plastic Pylorojejunostomy in Chronic Duodenal Ulcer, Arch. Surg. **30**: 528 (March) 1935.
6. Hamilton, I.: Congenital Cystic Dilatation of the Common Bile Duct, M. J. Australia **1**: 800 (May 27) 1939.
7. Poate, H. R. G.: Congenital Cystic Dilatation of the Common Bile Duct, Australian & New Zealand J. Surg. **11**: 32 (July) 1941.
8. Reel, P. J., and Burrell, N. E.: Cystic Dilatation of the Common Bile Duct, Ann. Surg. **75**: 191 (Feb.) 1922.

TREATMENT

The accompanying table of the types of treatment was compiled from the literature by Poate.[7]

SYMPTOMATOLOGY

The condition occurs predominantly among females. Its frequency among children and young adults is borne out by the fact that one author reports that of 69 patients 28 were infants and children under 10 years of age and 28 were between 11 and 20. The most important symptoms have been found to be (1) tumor, (2) jaundice and (3) pain. The presence of acholic stools is noted in a very small percentage of the cases reported. Fever was present in a few of the reported cases and, when present, the contents of the cyst were found to be infected.

DIAGNOSIS

When one is attempting to make a diagnosis with a tumor in the upper right quadrant of the abdomen, particularly as in the case we report, which was unassociated with jaundice and fever, the following possibilities are to be considered: (1) echinococcus cyst, (2) stone in the common duct, (3) mesenteric cyst, (4) pancreatic cyst, (5) cholecystitis, (6) enlarged gallbladder, (7) malignant growth, (8) tuberculosis and cyst of the kidney, (9) neuroblastoma, (10) cyst of the adrenal gland, (11) retroperitoneal tumor, (12) intestinal obstruction, (13) ovarian cyst, (14) catarrhal jaundice, (15) perforation of the gallbladder and (16) cyst of the liver. Even at operation the true condition was not recognized in a number of instances, and in nearly every one of these the termination was fatal.

REPORT OF CASE

History.—Z. B., a girl aged 6 years, first seen by one of us in the late afternoon of June 26, 1942, was complaining of severe pain in the upper right quadrant of the abdomen.

The family history was unimportant.

The patient had measles and pertussis at the age of 4 years, both uncomplicated. In July 1941 the child was sick for one week with an illness similar to the present, with pain in the upper right quadrant of the abdomen and vomiting. A physician who informed the parents that it was a mild case of appendicitis would not advise hospitalization unless the condition became more acute. The child gradually improved and was discharged in seven days. Since recovery from this illness, the child enjoyed perfect health with the exception of very mild pain in the abdomen of a transitory nature two weeks prior to hospitalization.

Present Illness.—During the day of June 24 the mother noticed that the child was not interested in playing and, on questioning, found that the child had abdominal discomfort. Later in the day the pain became so severe that the child doubled up and could not walk without bending over. There were three attacks of vomiting during the early part of the day, which were associated with a pronounced increase in the abdominal pain. From the cessation of this severe attack of pain up to the time of hospitalization the child ate poorly, had one normal defecation, voided urine naturally, preferred to remain in a recumbent position and was afebrile. There was no return of the sharp, colic-like abdominal pain as seen early in this attack.

Physical Examination.—The child was in a recumbent position when first seen, appeared to be very friendly, was cooperative and did not suffer pain. She was well nourished, of normal development for a child of 6 years, and did not appear to be very ill. Her temperature, pulse, respiration and color were normal. Complete physical examination gave entirely normal results except for the abdominal findings. It was noted that the child was more at ease with the legs slightly flexed, although she could extend them without any great discomfort. Observation showed the skin of the abdomen to be of normal color, and the abdominal muscles were seen and felt to be in a state of mild tonicity. A definite bulging was noted in the upper right quadrant of the abdomen, which was carefully examined. This apparent abnormal mass was dull to percussion, about the size of a small grapefruit, was smooth in outline, apparently was not movable, and was quite painful when pressed firmly by the examiner's fingers. The liver and spleen were not palpable. Pressure over the right kidney from behind failed to elicit a transmission of the pulsations. The possibilities as to the nature of the illness were discussed with the parents, and hospitalization was advised and procured at this time.

Attempt was made to ascertain the true nature of the trouble by pediatric and surgical consultations.

Urinalysis was normal; blood examination gave normal results except for a leukocytosis of 16,450; the differential count was normal. No further blood studies were made with respect to the biliary system because the probability of pathologic changes in this system was not suspected. It was evident, however, that no jaundice was present. X-ray examination of the abdomen three days after admission showed a dense soft shadow in the upper right quadrant and epigastric region. No calcareous deposits were shown. A gastrointestinal series with fluoroscopic examination showed no abnormalities except for the dense shadow shown on the plain plate but did show

Types of Treatment of Cases Reported in the Literature

Treatment	Number	Died	Recovered
No treatment	11	11	0
Aspiration	4	4	0
Drainage only	30	28	2
Drainage followed by secondary anastomosis.	17	5	12
Primary anastomosis of cyst to intestine	27	7	20
Excision of cyst: primary anastomosis of hepatic duct to intestine	4	2	2
Excision of cyst with drainage; secondary anastomosis to intestine	1	0	1
Excision or attempted excision of cyst, with or without drainage	8	7	1
Nature of operation not known	3	2	?
Total	105	66	38

that the pyloric end of the stomach and the duodenum was displaced to the left and down by this mass. An intravenous pyelogram (neoiopax was used) showed both kidneys functioning. On the left side the kidney and ureter were normal. On the right a normal kidney, pelvis and calices were indistinctly shown probably because of obscuration by a tumor mass seen to be present. The kidney and ureter were in normal position (no displacement).

It was noted that during the four days of observation there seemed to be a mild variation in the size of the tumor from day to day.

The final preoperative impression was neuroblastoma with a very unusual history, so exploration of the pathologic process was done on June 30.

Operation and Result.—At the operation a paramedian incision was made and a large mass found completely filling the right upper quadrant. The liver was practically normal in consistency and there was, strange to say, little or no distention of this organ. The tumor mass occupied such a large area that the liver was displaced upward, the stomach was displaced to the left as demonstrated by x-ray examination, and the duodenum was very much deformed. Instead of being displaced as an anatomic organ that could be identified, it was a part of the mass spreading out in such a fashion that its outline could not be recognized. Except for the liver, the anatomy of the upper right quadrant could not be recognized. The mass was hard, either solid or fluid under high tension. After a considerable study there was one point at which fluid could be detected. There was no pulsation, so it seemed safe to aspirate the fluid. This was done and bile withdrawn. At this stage, with the vague picture presented, anastomosis of

the bile-containing structure to the duodenum seemed unsurgical, as it was impossible to see where the duodenum began or ended. Drainage of the gallbladder was decided on as a preliminary step to choledochoduodenostomy. The condition was definitely nonmalignant. While it seemed necessary in this patient, were we confronted with a similar condition again we would make every effort to turn the bile stream into the intestinal tract rather than drain the gallbladder, risking acholic stools. The gallbladder was drained through a counterincision below the costal margin at about the anterior axillary line.

We think we learned why this child was not jaundiced. The common bile duct had not only been dilated but had hypertrophied to such an extent that the fibrous tissue in its wall had been practically replaced by smooth muscle and the contractions were so great that not only had the common duct assumed in part the function of the gallbladder, but the violent contractions of the hypertrophied muscular wall of the duct were sufficiently powerful to push the bile through or by the obstruction at its entrance into the duodenum.

Fortunately, we have not been given the opportunity to learn the nature of this obstruction, but we assumed either that it was due to a tremendous hypertrophy of tissue in the wall of the duodenum simulating in a way that of a pyloric obstruction in a young child or, as has been described frequently in the literature, the tremendous dilatation may have caused an obstruction at the end of the common bile duct by what might be called strangulation rather than obturation. This was confirmed by the postoperative course. The stools became acholic, the reason being that the pressure in the common bile duct had been released by drainage through the gallbladder. When, during her convalescence, the drainage tract became occluded, her pains became intense, jaundice appeared, and small amounts of bile appeared in the stools. By careful manipulation, the drainage tract was reestablished, the jaundice cleared up, and bile again disappeared from the stools.

On August 13, forty-two days after the first operation and in spite of contraindications, it seemed necessary to connect the common bile duct with the duodenum. Operation was extremely simple, quite different from the first operation. The duodenum could be easily outlined. The common duct, while capable of violent contractions, had not diminished its caliber appreciably. It occurred to us, as to others, that a narrowing of the duct by excising a longitudinal strip might help, but this seemed in a way impracticable.

The union of the common duct with the duodenum did not offer the amount of difficulty usually met in such operations occasioned by the inequality of the thickness of the tissues in the two organs. In this patient the musculature of the common duct had hypertrophied to such an extent that it was much thicker than the wall of the duodenum, so that one did not fear leakage around the sutures, as obtains when a fibrous structure is united with a muscular structure. A rather large opening was effected. This might not have been necessary had we been in possession of exact knowledge concerning the nature of the original obstruction.

Postoperative Course.—This was rather stormy, with the usual difficulties frequently encountered in biliary operations. Seven days after the second operation the child's condition became most critical with what appeared to be the picture of a severe pneumonia. Active and energetic treatment was immediately instituted for pneumonia and on the second day definite evidence of left lower pneumonia was seen. The severe course of the pneumonia seemed to be little influenced by the adequate administration of sulfadiazine. This extremely severe pneumonic infection ran a course of ten days and at that time, after the use of two transfusions, oxygen, stimulants and excellent nursing care, the pneumonic consolidation began to show signs of resolution and a resulting fall in temperature, pulse and respiration. There were no complications following the pneumonia after resolution started, and the child was discharged in good condition, except for having lost approximately 20 pounds (9 Kg.). The child was confined to her bed for two weeks at home, during which time her weight gain was rapid and her return of strength most gratifying and permanent.

SUBSEQUENT EXAMINATION AFTER ONE YEAR

From the time of discharge, Sept. 14, 1942, until July 4, 1943 the child's progress and general state of health was perfect. On this day the child complained of general fatigue and mild generalized abdominal pain, and she vomited once. There was no fever, and mild purgation with forcing fluids produced gradual improvement. Examination on July 6, 1943 showed nothing of importance except for a mild icteric discoloration of the sclera. With the realization that something must have happened in the biliary tract to cause this upset condition, associated with jaundice, hospitalization was advised for a check-up.

Hospitalization from July 25 to July 29 showed nothing on physical examination of note except for a faint suggestion of yellow discoloration of the sclera; however, some very important facts were discovered:

1. A flat plate of the abdomen revealed no abnormality in abdomen or pelvis.

2. Cholecystography revealed three or four shadows in the gallbladder region, which suggested stone. No definite gallbladder shadow was shown.

Laboratory examinations revealed normal urine, blood count and picture normal, blood sugar 82 mg., blood urea 17 mg., blood urea nitrogen 8 mg., van den Bergh direct reaction negative, indirect positive, bilirubin 1.0, icterus index 11.

From the foregoing it is evident that the child has, unfortunately, developed biliary calculi which will certainly affect the prognosis, as the presence of these stones, in our opinion, caused a damming back of the bile and was thus responsible for the upset on July 4, 1943 and the subsequent jaundice.

SUMMARY

The diagnosis should be suggested by the following: (*a*) The patient was a girl. (*b*) A tumor mass was present in the upper right hypochondriac region. (*c*) The tumor mass varied in size and consistency. (*d*) The pain was colicky in character. (*e*) The stomach and duodenum, on x-ray examination, were shown to be displaced to the left more than one would expect from a solid tumor in the right upper quadrant. (*f*) The child was healthy and happy when not in pain.

Jaundice is a valuable aid in diagnosis when present.

Cholecystography and biliary studies of the blood would be of invaluable aid when such a condition is suspected.

Choledochoduodenostomy seems to be the operation of choice, while cholecystoduodenostomy is the procedure of second choice.

Operative procedure is absolutely necessary, for no reports have been found where recovery took place spontaneously.

Rarely is it possible to elicit the actual etiology of the condition.

1227 North Calvert Street—2937 North Charles Street.

Broad Humanism of Medicine.—The contrast between the broad humanism of medicine and "the inhumanity of man to man" in many other social relations is most striking in times of war or preparation for war when the ethics of conflict justifies the wholesale slaughter of enemies and the saving and protection of friends only. This great contrast was nobly stated by Louis Pasteur, whom the French people have voted the greatest of Frenchmen, greater even than Napoleon, and of whom Sir William Osler, once professor of medicine in this university [University of Pennsylvania] said "He was the most perfect man who ever entered the kingdom of science."—Conklin, Edwin G: "The Doctor's Dilemma" of Medical Ethics in Peace and War, *Science* **99**: 187 (March 10) 1944.

INTRAUTERINE PASTES

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Twelve years ago a series of articles[1] appeared in the European literature with respect to the dangerous effects of soft soap pastes when introduced into the uterine cavity for the purpose of terminating pregnancy. Several of these products have been available to physicians since 1930. The ingredient common to practically all of these is soft soap. Some contain small quantities of iodine as potassium iodide and traces of various aromatic tinctures such as benzoin, myrrh or thymol in addition to the soap.

Several editorial items have appeared in THE JOURNAL[2] with respect to the deaths and injuries reported in Europe from the use of these products. I have had occasion to review in connection with the development of actions under the Federal Food Drug and Cosmetic Act a number of abortion fatalities and injuries in which these pastes have reportedly been used. Similar cases have not been previously reported as occurring in the United States. Manifestations noted may be grouped into several distinct classifications:

I. Systemic effects:
   - A. Hemolysis, general and severe, resulting in death or mild, resulting in hemolytic jaundice.
   - B. Pulmonary embolism, sometimes fatal.
   - C. Generalized septicemia, with fatal results, or with recovery but with local residua.

II. Local effects:
   - A. Inflammation and its sequelae such as sterility due to tubal occlusion, peritonitis, and necrosis of uterine wall.
   - B. Bleeding as either severe acute hemorrhage or prolonged continued bleeding.

The systemic effects as mentioned are evident in the following:

Mrs. K., aged 26, mother of 2 children, two months pregnant and in good health, visited a physician, who introduced 5 cc. of paste slowly through a metal cannula which had previously been inserted to reach just within the internal os uteri. This occurred at 11 a. m. Shortly thereafter while reclining on a couch in his office she became cyanotic and weak and required help to reach her car. She collapsed within a few hours and died at 5 p. m. that day after raising considerable bloody sputum. Postmortem examination performed that evening revealed that the blood had completely hemolyzed. Some of the paste itself was found at the site of placental attachment, between the placenta and the uterine wall, the placenta being partially detached.

A specimen of blood was examined for potassium content. The potassium value for the fluid blood was found to be 287 mg. per hundred cubic centimeters of blood. Since the blood had been completely hemolyzed, this potassium value may be considered equivalent to a similar serum potassium level and as incompatible with life. A careful chemical analysis of several organs revealed no indication of poisoning from any other source. Death may also have been due to the extreme anoxemia concurrent with total destruction of the red cells.

The fluid condition of blood in patients injected with soap as an abortifacient has been noted by others.[3] Experimentally it has been found that this paste is capable of causing blood destruction when injected intravenously in rabbits.[3]

Mrs. I., aged 19, a nullipara, two months pregnant, visited an osteopathic physician, who introduced 10 cc. of a soft soap paste into her uterus through a cannula according to the previously described technic. This was at 10 a. m. At 11 o'clock she walked with the aid of another woman to a hotel one city block from the place where the abortion had been performed. She began to cough sporadically shortly after going to bed in this hotel. She became cyanotic and weak, raised considerable bloody sputum and was seen by a neighborhood physician, who was called in shortly after 1 p. m. He made a diagnosis of embolic pneumonia and sent her immediately by ambulance to a hospital a mile away. Shortly after arrival at the hospital she died. Postmortem examination revealed multiple petechial hemorrhages in the lungs and thrombosis of pelvic vessels. There was some cloudy swelling of the kidneys.

Mrs. K., aged 30, mother of one child, presented herself to her family physician with an incomplete abortion. She had been healthy prior to the occurrence of this abortion, which had apparently occurred spontaneously. Her physician introduced 5 cc. of a soft soap paste slowly into her uterus according to the technic already mentioned. The patient complained of some pain during the injection. While still on the doctor's table she became cyanotic and dyspneic. She was rushed immediately by ambulance to a hospital and placed on oxygen therapy. A chest film taken at that time as well as subsequent films indicated pneumonia of embolic origin. After thirty days in the hospital the patient was released as convalescing. She subsequently recovered.

Multiple microemboli from the use of these pastes have been described in the German literature[4] in fatal cases.

Severe infection which occurred as a sequel to the introduction of paste into the uterus resulted in death in the case of Miss G., a schoolteacher aged 20, a nullipara, pregnant three months. The patient was injected as described in the other cases mentioned. She suffered no immediate ill effect but went to a rest home in the same locality, where after several days of moderate flowing twin fetuses were passed. At this time she began to develop a fever and was sent to her home approximately 100 miles away. While there she was hospital-

From the Food and Drug Administration, Federal Security Agency. This study was carried out under the guidance and encouragement of Dr. Robert P. Herwick, chief, Drug Division, Food and Drug Administration. The cases were made available for study through the active cooperation of the State Boards of Medical Examiners, physicians and hospitals throughout the country. The animal experimental work referred to was performed by Dr. Ernest Grafenberg of New York and Professor John L. McKelvey of the University of Minnesota at the request of the Food and Drug Administration. Dr. Walter T. Dannreuther, Dr. Jennings Litzenberg, Dr. Paul Titus and other members of the American Board of Obstetrics and Gynecology cooperated in the technical preparation for the trials mentioned in this paper. Dr. Anton J. Carlson provided helpful consultation in connection with interpreting the physiologic phenomena reported. The original reports on hemolysis were from the laboratories of Dr. Frank L. Kozelka at the University of Wisconsin. Dr. Gordon A. Granger and Dr. Norman DeNosaquo of the Food and Drug Administration staff actively cooperated in the investigations of injuries and deaths reported.

1. Rabau, E.: Dangers and Advantages of Abortifacient Pastes; Review of Literature, Therap. d. Gegenw. **73:** 461-462 (March 31) 1932. Sachs, E.: Dangers and Advantages of Use of Salves, Ztschr. f. Geburtsh. u. Gynäk. **102:** 433-468, 1932. Margraf, C.: Death Caused by Interruptin Injection: Case, Fortschr. d. Therap. **8:** 560-565 (Sept. 25) 1932. Franken, H.: Death of Tuberculous Patient Following Use of Interruptin: Case, Zentralbl. f. Gynäk. **56:** 1282-1289 (May 21) 1932. Nieslony, F.: Fatal Result of Use of Interruptin as Abortifacient: Case, ibid. **56:** 2193-2194 (Sept. 3) 1932. Fingerland, A.: Lethal Pulmonary Embolism Caused by Interruptin Paste Used for Artificial Abortion, Casop. lék. česk. **71:** 935-939 (July 22) 1932. Sellheim, H.: Advantages and Dangers of Use of Salves and Pastes, München. med. Wchnschr. **79:** 335-339 (Feb. 26) 1932. Wagner, G. A.: Complications Caused by Use of Interruptin, Monatschr. f. Geburtsh. u. Gynäk. **90:** 445-446 (March) 1932. von Marenholtz: Dangers of Ointments, Aerztl. Sachverst Ztg. **38:** 85-90 (April 1) 1932. Engelmann, F.: Dangers of So-Called Nonsurgical Abortion with Interruptin, Deutsche med. Wchnschr. **58:** 166-169 (Jan. 29) 1932; Dangers of Using Interruptin, Zentralbl. f. Gynäk. **56:** 119-122 (Jan. 9) 1932. Muller-Hess and Hallermann, W.: Induction of Abortion by Salvelike Substances to Be Considered Malpractice, Med. Welt **6:** 373-375 (March 12) 1932. Abel, K.: Relation of Method and Means in Production of Abortion: Comparative Study of Composition, Action and Dangers of Interruptin, Antigravid and Provocol, Deutsche med. Wchnschr. **58:** 620-623 (April 15) 1932. Otto, K.: Unsatisfactory Results of Use of Interruptin, Zentralbl. f. Gynäk **56:** 112-118 (Jan. 9) 1932. Walther: Use of Provocol and Other Ointments, Med. Klin. **28:** 582-583 (April 22) 1932. Haselhorst.[3] Brack.[4]

2. Abortifacient Pastes, editorial, J. A. M. A. **98:** 2155 (June 11) 1932. Interferin, ibid. **105:** 1210 (Oct. 12) 1935. Abortifacients and Leunbach's Paste, ibid. **111:** 535 (Aug. 6) 1938. Abortifacient Pastes, ibid. **115:** 221 (June 20) 1940.

3. Haselhorst, G.: Warning Against Use of Interruptin, Zentralbl. f. Gynäk. **56:** 1050-1057 (April 23) 1932.

4. Brack, E.: Fatal Effects of Interruptin, Zentralbl. f. Gynäk. **56:** 122-124 (Jan. 9) 1932.

ized. After a stormy course during which she received repeated blood transfusions and had a daily temperature range to 105 F. she died one month after the injection of the paste. Postmortem examination revealed multiple abscesses in the pelvis, necrosis of the entire posterior portion of the uterine wall and generalized bacteremic phenomena throughout the body. It was the opinion of the attending pathologist and the attending physician that the picture seen here was one of infection caused by the introduction of a foreign body into the uterus which possessed irritating properties and that if a chemical action was demonstrated experimentally this action, which chemically causes necrosis, would enhance the severity of the infection produced in this case.

The introduction of 3 cc. of one of these pastes into the uterine cavity of dogs produced necrosis of the uterine wall within three weeks in 2 animals of a total of 4 injected by a competent surgeon.[5]

Mrs. U., aged 26, mother of one child, two months pregnant, had previously suffered a preeclamptic toxemia with her first pregnancy. She had suffered from nephritis since the age of 10 years. Paste was used to terminate pregnancy as outlined. A few days after the injection of the paste she passed the fetus and then developed fever and considerable pelvic pain. She was hospitalized with a diagnosis of septicemia, pronounced anemia and a pelvic adnexal mass. After a stormy hospital stay of thirty days, during which time she was given five blood transfusions, she recovered sufficiently to go home. The pelvic mass was still present at the time of her discharge from the hospital.

The sterility which follows the use of paste has been demonstrated to be due to the chemical action of the paste, according to the work of D'Amour and Kiven.[6] These findings have been confirmed in animals by independent investigators.[5]

Mrs. Q, aged 25, mother of one child, had a toxemic pregnancy and soon became pregnant again three months post partum. Following the injection of 8 cc. of one of these soap pastes in the manner described she aborted satisfactorily and did not develop immediate sequelae. She was seen regularly by her physician in connection with the care of her children and was known to be in good health during the ensuing year. One year after the abortion she complained to her doctor that she could no longer become pregnant. A test for the patency of the tubes showed them to be completely occluded on both sides. Although happily married, she has not conceived during the seven years which have elapsed since the injection of the paste.

Mrs. Y, aged 27, two months pregnant, had 5 cc. of a soap paste injected by a chiropractor. She flowed for four days. Six months later she developed appendicitis. At appendectomy the tubes on both sides were found to be completely atrophic and bound down by adhesions.

Peritonitis follows the introduction of soap into the peritoneal cavity of experimental animals.[7] In some instances the soap evidently escapes into the peritoneal cavity in women who have had paste injected.

Mrs. V, aged 26, mother of one child, had an abortion performed by an osteopath. She was in good health at the time. The first injection did not cause abortion. A second injection made five days later resulted in the patient passing the embryo in seventy-five hours. She continued to flow for three weeks, developed fever, complained of pelvic pain and was finally hospitalized with a severe peritonitis about two and one-half weeks after the second injection of paste. After several blood transfusions, considerable sulfonamide therapy and conservative care she recovered but continued to complain of a pain in her side. One year later a unilateral salpingo-oophorectomy was performed. The tube on the affected side was completely bound down with adhesions and the entire adnexa on one side were a mass of typical inflammatory adhesions. It is the opinion of the physician who attended the patient throughout her course that some of the paste leaked through the tubes.

Acute hemorrhage occurred in the case of Miss P., aged 22, pregnant for the first time. She was injected with 10 cc. of a soft soap paste. The first injection did not terminate the pregnancy, and a second injection was performed six days later. Abortion followed after twelve hours, at which time the patient flowed severely. She continued to flow heavily for thirty-six hours. A physician called in at that time found her bathed in a pool of blood and practically exsanguinated. The patient was considered to be at the point of death and supportive therapy was given. Removal of the products of conception was performed four days after the acute episode. The patient recovered.

Prolonged bleeding was the most common finding following the use of this paste. A patient two to four months pregnant would continue to flow for three to six weeks after the passage of the products of conception. An explanation of this phenomenon may be that a mechanical method of interrupting pregnancy permits the release of thromboplastic substances, while chemical irritation of tissue does not permit such a release.

Two instances in which perforation followed the use of the paste, with infection and subsequent death, as well as 2 instances in which there were urticarial responses are mentioned here to point out that the dangers common to other methods of producing abortion are not lacking when pastes are used.

COMMENT

In addition to these consequences from the use of soap pastes, physicians who have used such products as abortifacients have informed me that 50 per cent of the patients on whom it is used find it ineffective. An explanation of this has been offered in view of the probable mode of action of the soap products. It has been suggested that paste acts to cause abortion by killing the fetus. If this is true it would explain why a considerable time might elapse before the fetus is passed. Another explanation which has been offered is that the pastes are not retained within the uterine cavity in many instances but are expelled shortly after application and therefore are ineffective because not retained. These pastes have been offered commercially for the treatment of various disorders of the female genital tract. Where they have been tried, it has been stated that they have been ineffective.[5]

Studies made by Leunbach [8] indicate that these pastes are capable of covering the entire surface area of the interior of the uterus. It is possible to assume that if the tubular ostia are open the paste will escape through them. Postmortem findings in the cases reported here have indicated in several instances that the paste was actually capable of penetrating into the muscular wall of the uterus beneath the endometrium. There is also evidence that the paste seeps between the partially detached placenta and the uterine sinuses thus entering the blood stream. This has been reported in the German literature and occurred in 1 of our cases.

The use of pastes involves every danger which is inherent in a surgical invasion of the uterine cavity plus the added risks of introduction of a foreign body which

5. Personal communication to the author.
6. D'Amour, F. E., and Kiven, N.: Harmful Effects of Certain Chemical Substances on the Uterus of the Rat, Am. J. Obst. & Gynec. **29**: 503 (April) 1935.
7. Janson and Leunbach, J. H.: Danger of Provocol, Med. Welt **6**: 196-197 (Feb. 6) 1932. Personal communication.[5] Haselhorst.[2]
8. Leunbach, H. S.: A New Form of Intrauterine Therapy with Introduction of Antiseptic Paste in the Uterus, Monatschr. f. Geburtsh. u. Gynäk. **87**: 509-520 (April) 1931.

is lost to the control of the operator when once introduced. Its apparent ease of application renders it liable for use in the hands of the inept and in the hands of practitioners who would not attempt abortion by other means. The danger of a chemical irritant which can spread beyond the point where it is introduced and throughout the uterine cavity, perhaps pass out through the tubes into the peritoneal cavity or enter the blood stream, initiating the phenomena described, should not go unheeded. Appropriate steps have been taken to control this situation by the institution and successful completion of legal actions directed at the manufacturers of these products under the Federal Food, Drug and Cosmetic Act.[9]

SUMMARY

1. The effects of soft soap pastes introduced into a pregnant uterus may be fatal or result in serious injury.

2. Case reports in which such results were suffered are grouped under the headings of hemolysis, pulmonary embolism, septicemia, inflammatory sequelae including sterility and peritonitis, and hemorrhage.

Clinical Notes, Suggestions and New Instruments

PREOPERATIVE USE OF TESTOSTERONE PROPIONATE AS AN AID TO SURGICAL TREATMENT OF ENDOMETRIOSIS

JAMES RAGLAN MILLER, M.D., HARTFORD, CONN.

In 1940 Wilson [1] reported the use of testosterone propionate in the treatment of endometriosis of the rectovaginal septum. His patient was 28 years of age and had one child. In a period of thirteen months 4,800 mg. of testosterone was given and he noted (*a*) suppression of the periods for one year, (*b*) pronounced but incomplete reduction of the tumor and complete freedom from pain, (*c*) atrophy of the uterine mucosa, (*d*) persistent hoarseness, (*e*) progressive hirsutism and (*f*) enlargement of the clitoris. After discontinuing the treatment he noted regression of the masculinizing effects and a renewal of tumor growth with recurrence of pain. He did not give the subsequent history.

In 1941 Geist and Salmon [2] reported results from the use of testosterone propionate in 400 cases of functional bleeding and mentioned the rationale of its use in early endometriosis.

In 1943 Hirst [3] reported the use of testosterone propionate in the treatment of 2 cases of advanced endometriosis. He obtained reduction in swelling and relief of pain and suggested this form of treatment when radical excision is contraindicated or refused. He also suggested that progesterone might have a similar effect without causing the undesirable masculinizing effects.

In the case to be reported testosterone propionate was used for the purpose of reducing the size of an endometrial tumor which protruded into the rectal wall, thereby facilitating its subsequent removal by surgery.

The patient, a Polish woman aged 25, had been married for eight years and had never been pregnant. For the past three years she had been trying without effect to become pregnant. She sought relief from menstrual cramps and bloody diarrhea at the time of the periods. The cramps began after she started to flow. The day before the period, her bowels became at first semisolid and then with the bowel movement there was a discharge of mucus and blood and finally a diarrhea occurred which lasted as long as she was menstruating. Between the periods she felt well. On Aug. 16, 1943, the date of her first examination, which was just one day before the onset of her period, her bowels had already moved three times.

(On the history alone there is an irresistible impulse to make a diagnosis of endometriosis involving the wall of the rectum.)

She stated that symptoms had been increasing in intensity for the past six or seven months. With the exception of pleurisy eight years before of short duration just after marriage, she had been well until the onset of her present illness. A recent x-ray examination of the chest prior to employment in a munition factory showed no tuberculosis. The appendix had been removed eleven years previously. The last period was on July 22. Her periods were regular at about twenty-nine day intervals, lasting four or five days. The breasts reacted moderately. Examination showed a normal marital lower genital tract. The cervix was normal in size but limited in motion, and behind it in the posterior fornix there was a small cherry red polypoid mass which resembled a bit of granulation tissue at the point of a sinus tract following puncture for pelvic abscess. This tissue was immediately taken for biopsy without difficulty and without bleeding. The cervix itself was limited in motion, and behind it there was a nodular mass about half the size of the uterus itself which bulged into the rectal wall. With a finger in the rectum I felt no rough surface and the mucosa seemed everywhere intact. I did not detect any enlargement of the adnexa.

In the knee-chest position examination with the proctoscope showed no rectal bleeding, and the tip of the instrument could not be passed beyond the level of the cervix.

Since I was convinced that the lesion was due to endometriosis, I placed the patient immediately on 25 mg. of testosterone propionate in oil, given intramuscularly twice a week (to be given by the factory nurse), planning to keep her under this treatment to procure shrinkage of the tumor and possibly at a later date to remove the tumor and preserve the reproductive function, if that proved to be possible.

The biopsy showed endometriosis with glands lined by epithelium in the secretory phase. The stromal cells were swollen and showed a decidual-like reaction.

On September 13 the patient reported that she had had a period on the day after her first visit. This did not differ in any way from the previous period. She was due to have a period in about two days. She had had nine injections in all. She noticed that the breasts had not swollen before this period as they usually do. There had been no change in libido. Inspection of the external genitalia gave one the impression that there was some hypertrophy of the tissues around the clitoris but not of the clitoris itself. The cervix was more freely movable and the mass about half the size it was one month previously.

On October 11 she reported that her period came on September 18 to 22 without cramps and without diarrhea. Examination at this time showed a slightly puckered area in the posterior fornix where the biopsy was taken. The rectovaginal examination showed that the mass behind the cervix was a little smaller and the bowel wall over it was movable. Examination led me to believe that in another month I would be able to pass the proctoscope and examine higher in the rectum. I estimated the mass as one-third the size it was when I originally saw her. The clitoris itself was not enlarged, but the labia minora about it appeared to be hypertrophied.

On November 12 the menstrual period was reported to have lasted from November 5 to 8, two weeks late. She had now received twenty-four doses of testosterone of 25 mg. each. At this last period, however, she had a little diarrhea, but less than formerly. The mass was still present behind the uterus. I was unable to pass the proctoscope beyond the level of the cervix. She had no pain with this last period.

9. Interstate Shipment of Abortifacient Paste Enjoined, Medical News (Minnesota), J. A. M. A. **121**: 775 (March 6) 1943. Notices of Judgment Under the Federal Food, Drug and Cosmetic Act, Drugs & Devices, numbers 607, 608 and 657, February 1943, pp. 320-322 and 348; September 1943, numbers 751-753, p. 1; December 1943, number 802, p. 2.

1. Wilson, L.: Endocrinology **27**: 29, 1940.

2. Geist, S. H., and Salmon, U. J.: Androgen Therapy in Gynecology, J. A. M. A. **117**: 2207 (Dec. 27) 1941.

3. Hirst, J. C.: Am. J. Obst. & Gynec. **46**: 97, 1943

Since regression appeared to have come to a standstill the patient was prepared for radical surgery, and 1 Gm. of succinyl sulfathiazole was given three times daily for the five days prior to her operation, which took place on November 18.

With the patient under spinal anesthesia the vagina was carefully prepared as for a total hysterectomy. The lower midline scar was excised. Adhesions about the sigmoid were separated. The left tube and ovary appeared normal. The right ovary was the size of a hen's egg and converted into a chocolate cyst. A few spots of endometriosis were noted in the anterior cul-de-sac. The uterus was anteflexed, fixed by induration at the level of the cervix. The rectal wall was densely adherent, completely obliterating the posterior cul-de-sac. The right adnexa were removed. It seemed impossible to resect the endometriomas and preserve the reproductive functions, so the uterus was removed entirely. This was done, however, by first removing the fundus, with careful preparation of the right ureter under vision. The cervix was then removed below the mass, and the vagina was closed by sutures. The rectal mass with the cervix was then separated from the posterior wall of the vagina and from the uterosacral ligaments on each side. The rectum was then entered and the tumor excised with as little loss of mucous membrane as possible. At the time of operation the mass protruded into the lumen of the rectum and measured 2.5 by 3 by 4 cm. The rectal mucosa was then sutured longitudinally with number 00 chromic catgut, the second suture inverting the first. The preparation of the large bowel which had been carried out was very satisfactory, and no fecal matter or secretion was encountered during the entire operation. Before the abdominal wound was closed without drainage, 5 Gm. of sulfanilamide crystals was sprinkled in the operative area.

The patient made an excellent recovery with but little elevation of temperature and almost complete absence of gas pains. The bowels moved spontaneously without any intervention on the eighth day, except that liquid petrolatum by mouth was started on the fifth day. She left the hospital on the eleventh day, the wound closed by first intention and otherwise in excellent condition. The pathologic examination revealed that the uterus measured 4 cm. in greatest diameter and was symmetrical. The endometrium was mucoid and pink in appearance. The tube showed normal structure. The ovary measured 4.5 cm. in diameter and contained a typical chocolate cyst 3 cm. in diameter. The cyst had a granular brown lining. The cervix measured 3.5 cm. in diameter. The cervical os was regular. The membrane appeared intact. A segment from the rectum was a cylindric mass measuring 3 by 3 cm. Over three fourths of the surface was covered by shiny mucosa. On cross section the muscularis was 0.5 cm. in thickness, and surrounding this on the external surface was a thick layer of fibrous tissue which measured 1 cm. On multiple cross sections a few cystic zones measuring 2 mm. in diameter and containing brown material were seen in the muscularis.

A section of the rectal wall showed the lining epithelium intact. The muscularis was much thickened, and scattered throughout the wall both from the serosal surface and extending into the mucosa were numerous foci of endometriosis. These consisted of glands lined with columnar epithelium surrounded by a cellular stroma. There was a rather pronounced fibrosis of the muscularis associated with foci of endometriosis. Section of the ovary showed a hemorrhagic cyst. The wall was in part lined by dense fibrous tissue in which there were deposits of blood pigment. The uterus was lined with endometrium in a proliferative phase. The cervix showed scarring with 2 plus chronic inflammatory infiltration. Squamous epithelium showed keratinization.

The pathologic diagnosis was endometriosis of the rectal wall, endometriosis of the ovary with chocolate cyst and chronic cervicitis.

Follow-up examination on Jan. 10, 1944 disclosed the abdomen well healed, no sign of hernia and the top of the vagina well healed. The vagina was deep and has been found to be functionally satisfactory. There is a very slight induration at the top of the vagina. The breasts have not reacted.

COMMENT

The present case report illustrates the use of testosterone propionate in diminishing the activity and decreasing the size of the lesions in endometriosis so that radical surgery can be performed with less danger.

It is suggested that this method may be employed without adverse masculinizing effects over a period of three or four months, at the end of which time approximately maximum results are obtained and surgery can be undertaken.

179 Allyn Street.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT. AUSTIN E. SMITH, M.D., Secretary.

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry of the American Medical Association convened at the Association headquarters, Oct. 9, 1943. Those in attendance were Drs. David P. Barr, J. Howard Brown, S. W. Clausen, H. N. Cole, Morris Fishbein, E. M. K. Geiling, Robert P. Herwick, James P. Leake, Chester Scott Keefer, Stuart Mudd, E. M. Nelson, W. W. Palmer, Elmer L. Sevringhaus, Torald Sollmann and Austin Smith. In addition to members of the headquarters staff there were present Dr. E. E. Irons, Secretary of the American Medical Association Board of Trustees, Dr. Frank Krusen, member of the Council on Physical Therapy and Committee on American Health Resorts, Dr. Milton Veldee, director, Biologics Division, National Institute of Health, and Dr. Donald A. Wallace, secretary of the Council on Dental Therapeutics.

The following is an abstracted report of some of the more important discussions and actions:

Dangers of Multiple Dose Vials for Intravenous, Intramuscular and Intraspinal Injection.—The Council discussed the question of danger from the use of multiple dose containers and appointed a committee to study the possibilities of establishing standards for solutions thus marketed. Meanwhile the Council voted that multiple containers be accepted only when the nature of those preparations and the conditions of their use are such that significant bacterial proliferation could not occur during such use.

Omission of Official Articles.—The Council gave further consideration to the question of omission from New and Nonofficial Remedies of such preparations as appear no longer to require Council acceptance of individual brands. At this meeting it was voted to omit various liver and stomach preparations and digitalis preparations that come within the scope of the U. S. P., with the provision that chapters and general articles for the omitted preparations be retained in New and Nonofficial Remedies for the guidance of physicians and for use by advertising writers and journals which follow the Council in the acceptance of advertising for such preparations. It is pointed out that omission of these articles involves the cessation by the firms concerned of the use of the Council's Seal of Acceptance in connection with the advertising of such products, but that no objection will be raised by the Council to advertising these preparations if the claims follow the limitations outlined in New and Nonofficial Remedies. The Council will give further consideration to omission from New and Nonofficial Remedies of official articles as occasion arises.

Explanation of the Work of the Council.—With the object of placing before the medical profession and others concerned authentic information concerning its ideals and activities, the Council voted to sponsor a series of six or more articles which shall explain the nature of the Council's work, the bearing of its various activities on its goal of rational therapeutics, and the rationale of such Council customs and attitudes as might

not be clear in the absence of adequate explanation. One such article has already appeared in THE JOURNAL (Feb. 12, 1944, pp. 433-439). Other articles of the series will appear as they are prepared and authorized by the Council for publication.

Names of Diseases in Advertising Accompanying Drug Products.—According to the provisions of the Council's Rule 4, the naming of disease conditions in or on the package of a medicinal preparation is to be condemned as being likely to lead to self medication. In view of the fact that preparations for parenteral injection are not likely to lead to self medication, the Council voted to make no objection, unless occasion should arise, to directions accompanying market packages of such products even though they contain directions for disease for which the material may be indicated.

Mineral Oil in Foods.—The Council discussed claims which have been made for the use of mineral oils in foods. From this discussion it became apparent that the Council feels that mineral oil has a legitimate medicinal use but is entirely without nutritional value. Accordingly, the Council voted to regard as unacceptable any labels or advertising which purport to show how mineral oils should be used in foods.

Limitation of Dosage Scales of Accepted Vitamin Preparations.—In view of the confusion and economic waste caused by the multiplicity of dosage forms and sizes of vitamin preparations, the Council voted to limit acceptance of such preparations to the following dosages:

Riboflavin tablets of 1, 2, 5 and 10 mg. each.
Riboflavin ampul solutions of 0.2 mg. per cubic centimeter and special consideration to be given to solutions of higher concentrations that may be obtained by the use of other reagents.
Nicotinic acid tablets of 25, 50 and 100 mg. each.
No ampul solutions of nicotinic acid to be considered.
Nicotinamide tablets of 25, 50 and 100 mg. each.
Nicotinamide ampul solutions of 25, 50 and 100 mg. per cubic centimeter.
Menadione tablets of 1 and 2 mg. each.
Menadione capsules of 1 and 2 mg. each.
Menadione ampul solutions of 1 and 2 mg. per cubic centimeter.

Brands accepted by the Council in the future will be of the foregoing dosage sizes; those which stand accepted for New and Nonofficial Remedies but do not conform will be deleted when their present period of acceptance expires.

It was also voted to consider eligible for acceptance preparations of the following combinations of vitamins A and D:

Preparations of cod liver oil concentrate having a vitamin A potency of not less than 50,000 and not more than 65,000 units per gram, and a vitamin D potency of not less than 5,000 and not more than 6,500 units per gram.
Preparations of cod and halibut liver oil having a vitamin A potency of not less than 3,690 and not more than 5,000 units of vitamin A, and not less than 360 and not more than 500 units of vitamin D per gram.

No further action was taken to alter the Council's previous decision to limit acceptance of dosage sizes of thiamine hydrochloride to 0.5, 1, 3, 5 and 10 mg. orally and 1, 5, 10, and 50 mg per cubic centimeter parenterally.

Pertussis Vaccines.—The Council considered the status of current work being done on pertussis vaccines, including the use of such vaccines in combination with others. It is recalled that the Council has previously published status reports on this question. The last one appeared in THE JOURNAL, March 3, 1934, page 692. In view of the present work being done, the Council voted to ask certain investigators to prepare a further status report with a view to determining the acceptability of several submitted brands.

Use of Exact Official Drug Names and Synonyms.—The Council considered the confusion likely to arise even from apparent negligible deviation from exact official terminology. As a result of its discussion the Council voted that in all references to official substances in Council publications the precise official name or synonym be used and that submitted brands of official agents which may be considered by the Council should bear exact official terminology.

Permissible Variations in Labeled Content of Accepted Preparations.—The Council considered a report of the A. M. A. Chemical Laboratory on variations in content from the labeled claims of a number of preparations which had been examined by the Laboratory. Cognizance was taken of the bearing of the wartime emergency on such variations and their relation to what may be considered good commercial practice. After careful discussion the Council voted that preparations varying beyond 5 per cent plus or minus of labeled content will be accepted only if such variation may be especially justified.

Manufacturers Responsible for Modification of Errors in Manufacture.—When a manufacturer presents for the first time a product for inclusion in New and Nonofficial Remedies, the firm is required to give assurance that it will notify the Council at once on discovery that an error has occurred in the compounding, manufacture or packaging of a Council accepted drug on the market, or on the discovery that a Council accepted drug on the market has been found by a governmental agency, the firm itself or any one else to differ from its standard of identity, strength, quality or purity. It was brought to the attention of the Council that strict observance of this requirement had not always obtained. The Council voted that the Secretary recall to all manufacturers of accepted products their responsibility in this matter. Such a reminder has been sent to all manufacturers of accepted products and they have, without exception, renewed their adherence to this responsibility.

Use of Arsenic and Bismuth Preparations for Oral Infections.—The injection of arsenic and bismuth preparations for treatment of certain infections of the mouth has been the subject of considerable controversy. To present the status of such injection treatment, and possibly to point out the roles which the physician and the dentist may assume in the use of such preparations, the Council authorized the preparation of a status report for the information of those concerned.

Status of Council Rules.—The Council gave consideration to the status of its rules and voted that there was no need for change in the principles. To eliminate any possible confusion in interpretation of the explanatory comments accompanying the Council's rules a committee was appointed to edit the comments in the interest of clarification and greater precision.

The Council adopted a revised outline for presentation of products to provide the manufacturer with further explanations of the data that should be submitted to secure the most satisfactory and expeditious consideration of products.

Diphtheria Toxoid-Tetanus Toxoid Combined Preparations.—Consideration was given to the status of this and other combined biologic preparations. The Council agreed to continue its consideration of various brands which have been submitteed and to give further attention to the status of such mixtures as new evidence may arise.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

TETANUS-GAS GANGRENE ANTITOXIN (See New and Nonofficial Remedies, 1943, p. 522).

The following dosage form has been accepted:

PITMAN-MOORE COMPANY, INDIANAPOLIS

Tetanus-Gas Gangrene Antitoxin (Combined) Pepsin Digestion Refined: Syringe or vial each containing 1,500 units of tetanus antitoxin and 2,000 units each of Clostridium perfringens and Clostridium septique antitoxins.

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1943, p. 310).

The following additional dosage form has been accepted:

G. D. SEARLE & CO., CHICAGO

Ampuls Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%: 60 cc. Each cubic centimeter contains sodium morrhuate 0.05 Gm. and benzyl alcohol 0.02 Gm. in aqueous solution.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 20, 1944

EDUCATION OF RETURNING VETERANS

In November 1942, on signing the Selective Service Act, the President appointed a Committee on Education under the auspices of the Army and Navy to study the problem of education of men and women returning from the war. This committee was called "The Armed Forces Committee on Postwar Educational Opportunities for Service Personnel"; it aimed to make provisions for young people whose education had been interrupted by the war after their discharge from the armed services. Its report to the President was included in a presidential message to the House of Representatives on Oct. 27, 1943. One of the basic recommendations of this committee was:

> While the federal government should provide the necessary funds and should have the responsibility of seeing that these are spent providently and under generally accepted standards, the control of the educational processes and the certification of trainees and students should reside in the states and localities.

The following statement also occurred in the committee report:

> In considering administrative arrangements for the program it proposes, your committee has had as its primary objective the provision of arrangements which will have the program carried out with an absolute minimum of administrative overhead. . . . The postwar processes of education for ex-service men by the traditional state and local control of education should be fully respected and . . . the federal government should not inject itself into these processes beyond the degree necessary to assure that the funds it make available are providently spent.

The House referred the problem to the Committee on Education, which has been at work on it since December 1943. The outcome of its efforts were incorporated in the Barden bill (H. R. 3846). This bill is the result of extensive hearings including representatives of many educational institutions and national organizations. It incorporates the basic principle referred to, in which full use is provided for existing state agencies with the Veterans Administration acting in a general coordinating and administrative capacity. In reporting this bill out favorably on May 3, 1944, the Committee on Education stated:

> The Committee on Education in considering this bill and recognizing the soundness of the position taken by the President and the Armed Forces Committee on Postwar Educational Opportunities for Service Personnel to preserve the fundamental rights of the citizens of each of our respective states, have framed this legislation so as to avoid a concentration of federal power. This legislation has recognized the legitimate interests of the Veterans Administration in a matter so vital to the veterans. However, it equally recognizes the true interests of the veterans as citizens of our several states and preserves the integrity of their local educational institutions.

The committee concluded after exhaustive study "that matters so vital to the veterans as the decisions as to where and how they should continue their education should likewise be left with the educational agencies experienced in planning such programs, namely the local educational institutions."

In the meantime the Senate has passed the Clark bill (S. 1767), which deals with the problems of the returning veteran in a broad manner and which contains numerous provisions other than the educational ones. The educational provisions incorporated in title 2, chapter 4, call for much more extensive centralization of authority and administration in the Veterans Administration. While the educational aims of the Clark bill, now pending in the House in an amended form with a favorable report of the Committee on World War Veterans Legislation, deserve support, the educational provisions violate the policy which reserves control of education to the states and the localities. This is likely to defeat the ends of this portion of the legislation by providing an inferior type of training to the returning veteran.

The American Council on Education is convinced that the Barden bill should be adopted by the House or, as an alternative, that the educational section of the Clark bill be replaced with the provisions of the Barden bill. Other educational provisions of these bills are essentially the same with regard to the duration of the training, the sums paid the trainees, the eligibility for such training and the right of individual institutions to determine whether or not a trainee is qualified to enter or continue work in that institution.

The Council on Medical Education and Hospitals of the American Medical Association sent the following telegram:

Hon. Sam Rayburn
Speaker, House of Representatives
Washington, D. C.

On behalf of the Council on Medical Education and Hospitals of the American Medical Association we should like to be favored with inclusion of the following in the *Congressional Record*: The Council on Medical Education and Hospitals of the American Medical Association is in agreement with the educational aims of the Clark omnibus bill (S. 1767) but strongly feels that the educational provisions of this bill do not insure the best possible educational returns to the veterans, since it does not provide for full use of state agencies which are capable and

experienced in planning educational programs. The provisions of the Barden bill (H. R. 3846) make extensive use of existing state agencies and would provide a higher type of educational service. We urge that the Barden bill be adopted or that the educational provisions of the Clark bill be amended to include the educational safeguards now existing in the Barden bill. The interest of the Council in medical and premedical education places on us the responsibility for calling your attention to these matters and requesting that the gentlemen of the House give serious consideration to these basic educational principles.

VICTOR JOHNSON, Secretary.

This action is consistent with the point of view of the House of Delegates of the American Medical Association and with the policy of the Association as expressed in its platform regarding local and state control of education and health.

PROPHYLAXIS OF SPOTTED FEVER

The possibility that spotted fever may be prevented by injecting a minute dose of specific immune serum at the sites of presumably infectious tick bites has been suggested by Anigstein and his associates [1] of the Department of Preventive Medicine, University of Texas Medical Branch. Earlier investigators [2] found that active immunity is developed in monkeys following injection of yellow fever virus into a skin area previously infiltrated with homologous immune serum. Such infiltration allows the safe use of a highly virulent living vaccine, killed or artificially attenuated vaccines being relatively ineffective. It has also been found possible to intercept a local vaccinal virus infection by infiltration of the infected skin area with specific immune serum within a suitable length of time.[3]

The Texas epidemiologists studied the effects of separate intracutaneous injections of spotted fever virus and homologous antiserum. The serum was prepared by repeated intravenous and subcutaneous inoculations of rabbits with tick vaccine or with egg yolk sac vaccine. In their initial experiments a rectangular skin area of about ½ square inch was delineated with an indelible pencil on the guinea pig abdomen, and measured amounts of the antiserum were injected intracutaneously at each angle of the square. At varying time intervals after this infiltration 0.1 cc. of a demonstrably active suspension of infected guinea pig spleen was injected into the center of the square. With serum doses less than 0.025 cc. spotted fever was not prevented by this technic. With doses varying from 0.05 to 0.1 cc. all febrile reactions were prevented. Nevertheless the animals developed a solid immunity against spotted fever, as shown by reinoculation tests seventeen days later. With still larger doses (0.4 cc.) both infection and postvaccination immunity were prevented.

To develop a feasible prophylactic technic, virus was then injected into unprepared skin areas, followed after varying lengths of time by infiltration of the local skin area with specific immune serum. The inoculum in all tests was 0.1 cc. of a splenic emulsion or of a highly virulent tick emulsion. All febrile reactions were prevented in guinea pigs treated two to eighteen hours later by the local injection of 0.025 cc. of immune serum. The animals, however, did develop immunity to spotted fever, as shown by reinoculation tests one month later. The serum dose was increased to 0.4 cc. in animals in which the therapeutic test was delayed for one to five days after infection. All inoculated animals treated with 0.4 cc. of antiserum on or before the forty-eighth hour remained afebrile and developed an effective specific immunity. By the fifth day, however, the local serum injection was without demonstrable prophylactic effects.

From these data infiltration of local skin areas with specific immune serum at the site of presumably infectious tick bites would seem to be of practical clinical value if such treatment is given within the first forty-eight hours after infection. Such interception of the infection would presumably not prevent the development of specific immunity. Applications to human cases, however, have not yet been reported.

1. Anigstein, L.; Bader, M. N.; Young, G., and Neubauer, D.: J. Immunol. **48**: 69 (Jan.) 1944.
2. Sawyer, W. A.; Kitchen, S. F., and Wray L.: J. Exper. Med. **55**: 945, 1932.
3. Andrews, C. H.: J. Path. & Bact. **31**: 671, 1928. Fairbrother, R. W., ibid. **35**: 35, 1932. Green, R. H., and Parker, R. F.: J. Immunol. **45**: 171, 1942.

NERVOUS FACTORS IN TRAUMATIC SHOCK

The role of nervous factors in the production and development of traumatic shock is not clearly established. Slome and O'Shaughnessy [1] have reemphasized the importance of the nervous impulses from the traumatic area in determining the production and course of shock by demonstrating, under controlled conditions, that trauma applied to limbs isolated from the body except for nerve connections resulted in irreversible shock. Circulatory collapse could be prevented, or its onset delayed, when the animals were subjected to prolonged spinal anesthesia or when section of the nerves to the limbs had been previously performed. Under these experimental conditions, traumatic shock was believed to have resulted mainly from the discharge of nociceptive nervous impulses from the traumatized area acting by virtue of a neurocirculatory reflex. The local fluid loss that occurs during the traumatization of the limb would be responsible only for the initial depressor effect, the progressive state of shock being elicited by the continuous discharge of nervous impulses from the traumatized area.

However, much experimental work has been marshaled against the concept of nervous factors as the chief cause of traumatic shock. Thus complete section of the spinal cord fails regularly to protect against the development of traumatic shock, although it cer-

1. O'Shaughnessy, L., and Slome, D.: Etiology of Traumatic Shock, Brit. J. Surg. **22**: 589 (Jan.) 1935. Slome, D., and O'Shaughnessy, L.: The Nervous Factor in Traumatic Shock, ibid. **25**: 900 (April) 1938.

tainly blocks the afferent nociceptive stimuli.[2] Likewise the interruption of all nerve connections to the traumatized limb does not protect against the onset of shock.[3] Finally complete curarization, which performs an effective nerve muscle block by acting on the end plate, did not modify the picture of shock induced by trauma to the limb.[4] In an attempt to reconcile these two sets of contradictory experiments, Swingle and his group [5] have undertaken an extensive investigation on the nature of the hypothetical nervous factors in shock and the mechanism by which they influence the onset and development of circulatory collapse. They first confirmed the observation that complete section of the spinal cord or interruption of the major nerves of the limb did not prevent the development of shock following trauma to the limbs. However, thorough infiltration with procaine of the major nerves of the area to be injured protected 10 of 11 animals against shock. A characteristic observation in these animals was that blood pressure tended to return to high levels immediately after the completion of trauma. Apparently then, nerve section and complete cord section, but not nerve anesthesia, removed some nervous elements necessary to maintain the resistance of the animals to shock. A partial section of different areas of the cord was performed to analyze which nervous pathways in the spinal cord are essential for the transmission of impulses from the injured tissues. Chordotomy involving bilateral removal of dorsolateral and dorsal areas did not interrupt the transmission of the nociceptive impulses, and shock occurred on traumatization of the limb. Section of the ventrolateral areas of the cord did prevent the occurrence of traumatic shock in 77 per cent of cases. These areas must be the site of pathways necessary for the transmission of depressor nerve impulses from the traumatic area. When the ventral area of the spinal cord was severed, shock occurred almost regularly after trauma even though the ventrolateral areas had also been interrupted or the nociceptive stimuli had been blocked by local infiltration of the major nerves of the limb with procaine.

These experiments lend support to the view that nervous factors have an important part in the causation and course of traumatic shock. They explain some of the apparently contradictory results obtained in experiments in which peripheral nerves or central pathways have been interrupted without influencing the onset and development of shock. Further, they introduce the new concept that certain nervous factors may not act to favor the development of shock but, conversely, to increase the resistance against circulatory collapse; their influence is thus much more complex than that which results from harmful nociceptive impulses. Further studies will no doubt provide a better understanding of the mode of action of these different nervous elements.

2. Freedlander, S. O., and Lenhart, C. H.: Traumatic Shock, Arch. Surg. **25**: 693 (Oct.) 1932. Parson, E., and Phemister, D. B.: Hemorrhage and "Shock" in Traumatized Limbs: Experimental Study, Surg., Gynec. & Obst. **51**: 196 (Aug.) 1930.

3. Blalock, A.: The Probable Cause for the Reduction in the Blood Pressure Following Mild Trauma to an Extremity, Arch. Surg. **22**: 598 (April) 1931.

4. Cicardo, V. H.: Mecanismo del choque traumático experimental, Semana med. **15**: 2 (Jan. 6) 1944.

5. Eversole, W. J., and others: The Nervous Factor in Shock Induced by Muscle Trauma in Normal Dogs, Am. J. Physiol. **140**: 490 (Jan.) 1944. Swingle, W. W., and others: Experimental Analysis of the Nervous Factor in Shock Induced by Muscle Trauma in Normal Dogs, ibid. **141**: 54 (March) 1944.

BILATERAL OOPHORECTOMY WITH RADICAL OPERATION FOR CANCER OF THE BREAST

Horsley [1] states bluntly in a recent contribution that his experience with late results of radical operation for cancer of the breast in young women has been disappointing. Of 9 patients under 36 years of age on whom radical operation was done from Sept. 1, 1922 to Nov. 1, 1937 5, or 55.5 per cent, had recurrence. Of the total cases of radical operation of 148, including these 9 for this same period, there were 75, or 51.02 per cent, recurrences. Since 1937 Horsley has combined bilateral oophorectomy with the radical operation for cancer of the breast in young women. Later he extended this procedure to all patients in the premenopausal stage. From Nov. 1, 1937 to Oct. 1, 1943 he had performed this operation on 25 patients. There have been only two recurrences (8 per cent), one in a patient with bilateral breast cancer who doubtless had internal metastases at the time of operation and the other in a patient with mucoid cancer. The failure of the castration in the case of mucoid cancer is probably due to the fact that the pathogenesis of mucoid cancer of the breast differs from that of the usual mammary carcinoma and that it is not influenced by estrogens, as it probably arises from the stroma. Horsley suggests that the neoplasm should be examined immediately after the radical operation on the breast and before attempting a bilateral oophorectomy, which seems to be efficient in preventing recurrence after a radical operation for the usual type of mammary cancer but will be of no avail in mucoid cancer of the breast. If one excludes from this series the last 6 cases, in which operation has been performed too recently to be of much significance, there remain 19 cases, fourteen months to six years after operation, with only one recurrence, giving an incidence of recurrence of 5.3 per cent. This incidence, when compared with that of 55.5 per cent in the author's earlier and quite comparable group, is significant and is probably more than accident.

The influence of the ovarian function on the development and course of mammary carcinoma has been known for some time. According to Halberstaedter,[2] Shinzinger recommended bilateral oophorectomy in

1. Horsley, J. Shelton: Bilateral Oophorectomy with Radical Operation for Cancer of the Breast, Surgery **15**: 590 (April) 1944.

2. Halberstaedter, L.: The Role of Artificial Menopause in the Treatment of Cancer of the Breast, J. Internat. Coll. Surgeons **4**: 435 (Oct.) 1941.

1889 as an auxiliary measure in the operative treatment of mammary carcinoma because he had observed that the disease runs a more malignant course in young women than in women who have passed the menopause. Beatson, Lett, Torek, Halberstaedter and others reported a few advanced inoperable cases of mammary carcinoma with metastases, in which a definite, even though temporary, improvement followed castration. The work of Huggins on castration for cancer of the prostate offers an analogy. The role of estrogens in the production of mammary carcinoma was successfully demonstrated in animal experiments.

Estrogenic production of mammary carcinoma in mice and in rats by Lacassagne and by Geschickter and Byrnes was commented on in an earlier editorial [3] of THE JOURNAL. The recurrences of cancer of the breast after a radical operation are believed to be due to cancer cells that have been left. The small amount that remains would be stimulated by estrogenic substances. It appears logical, therefore, to remove these influences by castration.

3. Estrogenic Production of Mammary Cancer, editorial J. A. M. A. **119**: 885 (July 11) 1942.

Current Comment

CHEMOTHERAPY OF FILARIASIS

Filariasis in naturally infected cotton rats has been treated by Culbertson and Rose [1] of the Department of Bacteriology, Columbia University, with apparent success, using stibamine glucoside. Florida cotton rats are frequently infected with Litmosoides carinii, the adult parasites usually being found in the pleural spaces with microfilariae constantly given off into the peripheral blood. Several drugs were tested for their therapeutic effects on this natural infection. Among them stibamine glucoside ("neostam") gave particularly favorable results. This is a relatively nontoxic antimony compound, already used with success in the treatment of kala-azar.[2] Four doses of from 40 to 60 mg. of this glucoside were administered intramuscularly every week to naturally infected rats, microfilaria tail counts being made daily during the course of the treatment. In a typical case the count was 136 per hundred microscope fields before treating, falling to 52 by the fourteenth day, to 16 by the thirty-fifth day and to zero by the sixty-fourth day. The animal was then killed and over 40 dead adult worms recovered from the pleural cavity. In a control untreated rat similarly infected the initial count remained fairly constant during the sixty-four day period. At necropsy 50 living, freely moving worms were found in the pleural cavity of the control rat. In several cases the peripheral blood became free from microfilariae on or before the twenty-first day. In rats killed before all microfilariae had disappeared from the circulation adult worms were also found dead and enveloped in pleural exudate, death at times occurring as early as the eleventh day of treatment. From these data, repeated injections of stibamine glucoside apparently resulted in a cure of filariasis in the cotton rat. Napier [2] showed that the drug is well tolerated by man in comparatively large doses.

1. Culbertson, J. T., and Rose, H. M.: Science **99**: 245 (March 24) 1944.

2. Napier, L. E.: Indian J. M. Res. **16**: 911, 1929.

TOBACCO CONSUMPTION IN THE UNITED STATES

During 1943 the per capita consumption of tobacco products in the United States reached an all time peak, presumably because of increased consumer purchasing power and other conditions related to the war. However, the total consumption in each year since 1932 has shown an increase over the preceding year. The consumption of cigarets is now at the highest level on record, but the consumption of cigars and chewing tobacco is below that of the previous year. Strangely, the consumption of snuff also increased, but the consumption of smoking tobacco declined. Cigaret consumption during 1943, as estimated by sale of revenue stamps, was over 257 billion, which was an increase of 9 per cent over the 235.8 billion for 1942. The consumption is estimated to be even greater than is indicated by the sale of revenue stamps because of the large number of tax free cigarets which are shipped to the armed forces outside the United States. The per capita consumption of cigarets in the United States is 1877, which is 59 times the utilization in 1900. No other country has reached a similar level of consumption, but there has been an increase uniformly in all countries. The significance of this consumption of tobacco on the economics and health of the nation demands more consideration than has heretofore been given to it.

CARDIOVASCULAR DISORDERS IN SOUTH PACIFIC AREA

The contributory role of heat, humidity and other environmental factors of the tropics on the development of cardiac disorders in the armed forces has been analyzed recently by Hyman.[1] His study is based on a large series of cases observed in the South Pacific areas. Neurocirculatory asthenia was responsible for the largest number, over one third of all cases. Cardiac neurosis was only one manifestation of the general picture of psychosomatic neurosis characterized by gastrointestinal, central nervous system and psychic abnormalities. Patients with neurocirculatory asthenia were unfit for combat and physical duties but were susceptible of rehabilitation for other services. About one fourth of the cases seen by Hyman exhibited various cardiac arrhythmias, particularly premature beats. As a rule, premature beats had little clinical significance and were not incapacitating. All other irregularities, such as paroxysmal and persistent auricular fibrillation, paroxysmal tachycardia and heart block, were con-

1. Hyman, A. S.: Cardiovascular Disease in the Tropics, U. S. Nav. M. Bull. **42**: 545 (March) 1944.

sidered as serious disabilities, and all patients with any of these were immediately discharged from active military duties. In nearly all cases of this group, underlying cardiac pathologic change could be determined, usually rheumatic or coronary disease. Valvular heart disease was observed in 20 per cent of the cardiac cases. In all of them the condition existed prior to enlistment, and in practically every instance, in addition to a history of rheumatic fever, clinical signs and symptoms of advanced valvular heart disease were present. Deficient physical examination was responsible for the induction of these men into military service. Hyman strongly recommends that medical officers should exert the utmost care in detecting these missed cases. Coronary heart disease was largely a problem of the construction battalion units in connection with the higher age periods in this group. Strenuous physical labor associated with particular climatic factors was an important element in the development of coronary episodes. Prevention of attacks is believed possible, provided the prodromal symptoms of the condition are given sufficient attention. The incidence of hypertension was relatively low—only 6 per cent of all cardiovascular cases. Many of them were found in association with other manifestations of neurocirculatory asthenia. Peripheral vascular disease was also rare and was found more frequently in the older age groups. The exposure to heat and humidity of the tropical areas appears to play an insignificant part in the production and precipitation of cardiovascular disturbances, with the possible exception of neurocirculatory asthenia. Physical and mental stresses and strains of war are certainly much more important factors in this connection.

VENEREAL DISEASE RATES IN THE UNITED STATES

Compilations made by officers of the United States Public Health Service indicate that there was a rise of 11 per cent in newly reported cases of gonorrhea among civilians in the United States in the period from July through December 1943. In that period 158,000 new cases were reported nationally, as compared with 137,000 for the corresponding period in the previous year. In the same period newly reported cases of syphilis decreased 16 per cent, dropping from 290,000 to 245,000. The figures offer basis for comparison, although it is recognized that reporting of venereal diseases in the United States is not complete or adequate. The importance of venereal diseases as a cause of disability is indicated by the fact that 861,000 cases of syphilis and gonorrhea were reported during 1943, which is 70 per cent more than the combined total of cases of diphtheria, malaria, meningitis, pneumonia, poliomyelitis, scarlet fever, smallpox, tuberculosis, typhoid, paratyphoid and typhus. The campaign against venereal diseases has been waged with increasing intensity in recent years. Special attention has been given to the protection of workers in industry, but apparently only a small percentage of industrial plants conduct venereal disease control programs. Notwithstanding the extensive campaign of education that has been conducted, there are still great numbers of people who attempt to treat themselves for gonorrhea with the sulfonamide drugs. Such drugs have been obtainable over drug store counters particularly in the Southern and Eastern states without a prescription. Sixteen states, however, have enacted legislation safeguarding the sale of sulfonamide drugs, and it would be most desirable that all states enact similar legislation. The information already developed from experiments carried out in the rapid treatment centers and in hospitals where penicillin is available indicates that penicillin may yet prove to be the most effective of all therapeutic agents discovered for the rapid treatment of both gonorrhea and syphilis.

TONSILLECTOMY AND POLIOMYELITIS

In his recent review of reports on the relationship between poliomyelitis and tonsil-adenoid operations, Howard [1] lists no less than 259 cases of poliomyelitis, mostly of the bulbar type, following tonsillectomy up to within sixty days. These cases were reported from various parts of the United States between 1910 and 1943. The patients were children as a rule not more than 12 years of age. The bulbar type of poliomyelitis was most frequent and caused many deaths. Nearly all these cases occurred in the presence of typical epidemics of poliomyelitis. While control observations are not available showing that poliomyelitis, under the circumstances mentioned, occurs more frequently in children after tonsillectomy and adenoidectomy than in children who have not been subjected to such operations, the clinical observations and impressions indicate that these operations may favor poliomyelitic infection. It would seem wise not to remove tonsils and adenoids when poliomyelitis is prevalent.

USE OF THE METRIC SYSTEM

The Council on Pharmacy and Chemistry recently declared [1] that the publications for which it has responsibility will contain statements of weight and measure only in the metric system. For the convenience of those who are not so familiar with this system, conversion tables will be placed in a prominent place in each book. The Council statement attracted widespread attention and much favorable comment. The American pharmaceutical profession adds strong support [2] by suggesting the deletion of all reference to the apothecaries' system from the official compendiums, the U. S. Pharmacopeia and National Formulary, except for conversion tables during the transition period. This is, of course, logical. If all branches of science and industry adopt the use of the metric system, confusion and misunderstanding will be lessened.

1. Howard, R. E.: Relationship of Poliomyelitis to Tonsillectomy, Ann. Otol., Rhin. & Laryng. **53**: 15 (March) 1944.

1. The Metric System, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **123**: 900 (Dec. 4) 1943.

2. Metric Millenium? editorial, J. Am. Pharm. A. (Practical Pharmacy Edition), April 20, 1944.

MEDICINE AND THE WAR

ARMY

SUIT OF ARMOR FOR SILVER WINGED AIRMEN

A suit of armor designed by Brig. Gen. Malcolm C. Grow, Surgeon of the Air Service Command, is now being manufactured in Britain and the United States in large quantities for the silver winged airmen. Two years ago General Grow began experiments in his laboratory. He discovered that low velocity missiles caused 79 per cent of all wounds incurred by fliers in the Eighth Bomber Command and that missiles striking the head, the neck and the thoracic and abdominal regions caused 85 per cent of the fatalities in the command. Calculations showed him that a suit of armor designed to cover these regions could prevent 67.15 per cent of the fatalities resulting from shrapnel and bullet wounds. Collaborating with Leonard Barratt, designer and production manager of the Wilkenson Sword Company, Acton, England, General Grow prepared models from iron and steel alloys cut and arranged in a hundred shapes. He found that squares of highly tempered steel were not so easily punctured as larger plates, and models were prepared with 2 inch squares, which would not splinter and which could stop a 20 mm. shell fragment from an exploding shell only 2 feet from the suit. In all, the armor weighs 22½ pounds without the helmet. General Grow then designed a snug fitting helmet of the same tempered manganese steel but made of curved strips which fit around the head from front to rear. The designer has arranged buckles so that with the pull of a single string the whole gear will drop instantaneously from the flier's body, allowing him complete freedom. American airmen in the European theater of operations have tested the suit of armor in battle, and a few weeks after its issue letters of thanks from pilots, radio operators and turret gunners were received at the Office of the Surgeon General.

U. S. ARMY HOSPITAL SHIP "MARIGOLD"

The United States Army transport *Marigold* (ex *President Fillmore*) was designated as a United States Army hospital ship on February 24 in accordance with international practice, as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Marigold* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered, through channels, to the Hungarian and Rumanian governments on March 9, to the Bulgarian and German governments on March 10, to the Japanese government on March 11 and to the Thai government on March 18. The ship's master of this and all other United States military hospital ships will at all times maintain sufficient copies of this general order for presentation to any authorized agent of an enemy belligerent who may require it for inspection.

STRENGTH OF ARMY NURSE CORPS ESTABLISHED AT 50,000

The War Department announced recently that the authorized strength of the Army Nurse Corps has been established at 50,000. An increased number of hospital trains planned for service, added station and general hospitals, and the need for nurses aboard ships were given as reasons for the increase. The authorized strength of 50,000 is a ceiling, the War Department said, and actual appointment of nurses will be determined by the needs of the Army in relation to casualties and by the rate of civilian nurses declared available by the Procurement and Assignment Service of the War Manpower Commission. The War Department added that nurses must undergo a period of training for their duty with the Army, and therefore future requirements must be anticipated. At the same time Major Gen. Norman T. Kirk, Surgeon General, U. S. Army, paid tribute to the Army Nurse Corps, noting that much of the excellent record made in this war by the Medical Department was due to the work of army nurses.

DISTRIBUTING CENTER FOR PARASITOLOGIC SPECIMENS

The Division of Parasitology of the Army Medical School, which serves as a distributing center for parasitologic specimens, received approximately 55,000 items from Jan. 1 to Dec. 31, 1943. These have been graded, vialed and reconditioned, and 52,110 have been redistributed to medical and graduate schools, public health laboratories or the military.

TABLE 1.—*Amounts and Percentages of Different Items Received and Distributed from Jan. 1 to Dec. 31, 1943*

Incoming		Item	Outgoing	
Number	Per Cent of Total		Number	Per Cent of Total
780	1.4	Protozoan cultures	780	1.5
1,091	2.0	Entomologic specimens (vials averaging 75 to 100)	1,368*	2.6
3,329	6.0	Preserved stools (cysts and ova) (vials averaging 10 cc.)	3,155	6.1
39,775	72.2	Malaria slides	35,696	68.5
10,122	18.4	Miscellaneous items (including helminthologic specimens)	11,111*	21.3
55,097	100.0		52,110	100.0

* Remainder of material supplied by Army Medical School.

TABLE 2.—*Materials Received and Shipped to Various Agencies from Jan. 1 to Dec. 31, 1943*

Agency	Percentage of Material	
	Received From	Sent To
Medical and graduate schools	18.6	78.0
Public health laboratories	58.7	6.4
Military sources	22.7	15.6

The type as well as the number and percentage of type material received and sent out during 1943 is summarized in table 1. These items were received from a number of different agencies. While space does not permit a detailed acknowledgment of the generous cooperation of various agencies, table 2 gives an idea of the groups supplying and using these materials.

Once again it is urged that individuals and groups send in parasitologic material which can be spared to the Director, Army Medical School, Army Medical Center, Washington 12, D. C., attention Division of Parasitology.

OBSERVE MOUNT SINAI HOSPITAL UNIT ANNIVERSARY OVERSEAS

Waldemar Kops, acting president of the Mount Sinai Hospital, New York, cabled congratulations (May 8) to the commanding officer of their hospital unit, in commemoration of the first anniversary of its arrival in North Africa. The Mount Sinai Hospital Unit was organized in 1940 and called to active duty in September 1942, starting its foreign duties in May 1943.

Lieut. Col. Herman Lande is its executive officer, and Major Ruth Chamberlain is chief nurse.

The Mount Sinai unit perpetuates a tradition of military service by the hospital dating from the Civil War. In the first world war medical officers, nurses, enlisted men and civilian employees from the Mount Sinai staff served at Base Hospital No. 3 of the American Expeditionary Forces in Vauclaire, France. In this war more than 700 men and women have left the hospital for service with the armed forces. Three former members of the house staff are reported prisoners of the Japanese. Two men have lost their lives in action.

In addition to the overseas unit, a second Mount Sinai unit for service in the United States was organized in November 1942 and is designated the Affiliated Hospital Unit No. 30. It consists of fifteen members of the staff under the direction of Dr. John H. Garlock and includes surgeons, physicians, laboratory and x-ray specialists, and dentists. This group may be activated to serve as an evacuation hospital in the interior of this country.

TERMINATION OF COMMISSIONS IN MEDICAL ADMINISTRATIVE CORPS

Accepted medical, dental and veterinary students who have elected to retain their appointments in the Medical Administrative Corps, Army of the United States, will be discharged from such appointments for the convenience of the government under the following circumstances:

1. Discontinuance of medical, dental or veterinary education.

2. Matriculation at an unapproved school of medicine, dentistry or veterinary medicine.

3. Failure to complete full course of medical, dental or veterinary instruction.

4. Failure to secure appointment in the Medical Corps, Army of the United States, within one year after completion of the prescribed full course of medical instruction, or failure to secure appointment in the Dental or Veterinary Corps, Army of the United States, within three months after completion of the prescribed full course of instruction. The number selected will depend on requirements within authorized procurement quotas.

APPOINTS FIVE SCIENCE WRITERS AS CIVILIAN CONSULTANTS

Major Gen. Norman T. Kirk, Surgeon General of the Army, has appointed five science writers as civilian consultants. The men, who are also members of a subcommittee of the Division of Medical Sciences of the National Research Council and members of the National Association of Science Writers, are David Dietz, science editor, Scripps-Howard Newspapers, Cleveland; James C. Leary, science editor, Chicago *Daily News;* Robert D. Potter, science editor, *American Weekly,* New York; Lawrence C. Salter, associate director of press relations, American Medical Association, Chicago, and William L. Laurence, science news editor, New York *Times.* These writers will work with the Surgeon General and his staff in the preparation of information for the public on new developments in medical research in the Army.

MAJOR JOHN W. HENDERSON JR. AWARDED SILVER STAR

Major John W. Henderson Jr., formerly of Worcester, Mass., has been awarded the Silver Star for "gallantry in action near Alimena, Sicily, July 22, 1943. Besieging enemy forces had compelled our troops to withdraw. Under cover of darkness and during heavy enemy machine gun and artillery fire, he successfully led a searching party well forward of outpost lines to locate and evacuate casualties. His outstanding courage and coolness under heavy enemy fire merit the highest praise." Dr. Henderson graduated from Harvard Medical School, Boston, in 1935 and entered the service May 20, 1941.

LIEUT. MARY H. McKINNON NAMED TO CADET NURSE POST

The War Department recently announced the appointment of 1st Lieut. Mary H. McKinnon, Army Nurse Corps, formerly of Los Angeles, as assistant to Major Mary Walker of Toulon, Ill., director of the U. S. Cadet Nurses in army hospitals. Lieutenant McKinnon will assist Major Walker in assigning cadet nurses who have completed their two and a half years of training in civilian hospitals to thirty army general hospitals throughout the country. Lieutenant McKinnon has seventeen years of civilian nursing experience to her credit. She joined the Army Nurse Corps in August 1943. She has also served in the office of the chief nurse at Walter Reed General Hospital, Washington, D. C. A native of Victoria, British Columbia, Canada, she came to this country to attend Teachers College at Columbia University, from which she was graduated with a B.S. degree. After five years of teaching in the Victoria elementary school system she returned to this country and attended the University of California School of Nursing. She was naturalized in 1932 and until she entered the Army Nurse Corps served as an inspector of the schools of nursing for the Board of Examiners in California.

EIGHT ARMY NURSES AWARDED PURPLE HEART

The War Department recently announced the award of the Purple Heart to eight second lieutenants of the Army Nurse Corps for wounds received as a result of enemy action in Italy:

Irene Virginia Barton, Anderson, S. C., wounded Feb. 7, 1944.
Ruth D. Buckley, Elmwood, Wis., wounded in February 1944.
Mary W. Harrison, Belpre, Ohio, wounded in February 1944.
Ruby L. Hoppe, Friedheim, Mo., wounded Feb. 7, 1944.
Helen A. McCullough, Wichita, Kan., wounded March 29, 1944.
Frances Virginia Raymond, Wichita Falls, Texas, wounded March 29, 1944.
Ruth Catherine Sobeck, Cokeville, Pa., wounded in September 1943.
Fern H. Wingerd, Omaha, wounded Feb. 7, 1944.

ARMY PERSONAL

After eighteen months in an Army hospital recovering after the loss of a leg in the New Guinea air raid in 1942, Major Max Goldman, formerly of Boston, was assigned to the AAF's Convalescent Center at Pawling, N. Y., where he will aid in the rehabilitation of sick and wounded fliers returning from combat. Major Gen. David N. W. Grant, the Air Surgeon, who made the assignment, stated: "Thus, it is anticipated, the liability of an artificial leg will be turned into an asset, applying the old adage 'Example is better than precept.'" In addition to the Purple Heart, Dr. Goldman wears a Fifth Air Force unit citation, the American Defense Service ribbon and the American, European-African and Asiatic-Pacific theater ribbons, the latter with two combat stars. He graduated from Tufts College Medical School, Boston, in 1936 and entered the service Oct. 15, 1940.

CAPT. LEO SCHNEIDER HELD PRISONER OF WAR

Information has recently been received that Capt. Leo Schneider, formerly of Portland, Ore., is being held a prisoner of the Japanese. Dr. Schneider entered the service in January 1941 and was in the Philippines from September 1941 until the fall of Bataan. He was reported missing in April 1942. Dr. Schneider graduated from the University of Oregon Medical School, Portland, in 1935.

BED PATIENTS IN ARMY DISPENSARIES

Bed patients "cared for in a dispensary will be carried as on a 'quarters' status, and the days lost will be considered as days lost in quarters," according to a recent change in Army Regulations.

MISCELLANEOUS

HOSPITALS NEEDING INTERNS AND RESIDENTS

At the request of the Procurement and Assignment Service, the Council on Medical Education and Hospitals has been publishing names of hospitals needing interns and residents. Since most medical schools will graduate another class in the late summer or early autumn, hospitals are requested to survey their needs for the next few months and report them to the Council for publication.

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment service:

(Continuation of list in THE JOURNAL, May 13, page 155)

DISTRICT OF COLUMBIA

St. Elizabeths Hospital, Washington. Capacity, 7,471; admissions, 3,457. Dr. Winfred Overholser, Superintendent (4 interns—October 1).

KENTUCKY

Kentucky Baptist Hospital, Louisville. Capacity, 150; admissions, 5,090. Mr. H. L. Dobbs, Superintendent (interns—October 1).

NEW YORK

Bronx Hospital, New York City. Capacity, 389; admissions, 8,075. Mr. William B. Seltzer, Superintendent (4 interns—October 1).

Goldwater Memorial Hospital, New York City. Capacity, 1,889; admissions, 1,975. Dr. C. G. Scherf, Superintendent (interns, residents).

PENNSYLVANIA

Pittsburgh Hospital, Pittsburgh. Capacity, 210; admissions, 4,516. Sister M. Rita, R.N., Superintendent (interns—October 1).

VIRGINIA

Stuart Circle Hospital, Richmond. Capacity, 120; admissions, 2,929. Miss Mabel E. Montgomery, R.N., Acting Director (interns—October 1).

WARTIME CONTROL OVER DISTRIBUTION OF ESSENTIAL NARCOTIC DRUGS

In a recent announcement, Secretary Morgenthau, through the Bureau of Narcotics, extended wartime control over the distribution of essential narcotic drugs down to the corner drugstore by setting up machinery for applying strict quotas to retail dispensers in any locality in which the bureau has evidence of leaks into illegitimate channels. No general application of purchase and sales quotas is contemplated at this time. Quota systems may be established where considered necessary by the Commissioner of Narcotics within a federal internal revenue collection district or in a limited portion of a district, such as a county, city or town. Where such a quota area is designated, retailers guilty of permitting lax handling of prescriptions or of condoning prescription frauds or of failing to protect adequately the drugs entrusted to them may be denied further supplies of opium and coca leaf preparations under the order known as Narcotics Conservation Order No. 2. Criminal penalties for violations of the order also are provided.

H. J. Anslinger, Commissioner of Narcotics, emphasized that present supplies of these drugs, properly distributed, are adequate to meet domestic and military needs. However, because of military requirements of the United Nations it is considered essential that these supplies be safeguarded to the utmost.

INFORMATION CENTERS FOR VETERANS AND WAR WORKERS

Brig. Gen. Frank T. Hines, administrator of the Retraining and Reemployment Administration of the Office of War Mobilization, announced recently that basic policies have been agreed on by the Retraining and Reemployment Policy Board for the establishment and maintenance of information centers for veterans and war workers in communities throughout the United States.

The policies in general provide that the armed forces will utilize every means to see that veterans are fully informed of their rights before leaving the services; that the principal government agencies directly involved—the War Manpower Commission, the Selective Service System and the Veterans Administration—will also prepare themselves to provide full assistance, and that these three agencies, in cooperation with local groups, will determine the best means of handling the problem according to the needs of local areas concerned.

Excellent information centers are already functioning in a number of communities, where they have been established through the patriotism and initiative of local leaders, General Hines said. It will be the policy of the Retraining and Reemployment Administration in sponsoring the contemplated information centers to cooperate with those already established, he added.

The administrator has appointed a committee of the policy board to work out the detailed operating application of these general policies, and these will be announced as soon as possible.

PERSONNEL CHANGES IN PROCUREMENT AND ASSIGNMENT SERVICE

Comdr. Maxwell E. Lapham (MC), U.S.N.R., whose serious illness several months ago forced him to relinquish his duties as executive officer of the Procurement and Assignment Service, has been ordered to active duty at the Naval Hospital, San Diego, Calif. Dr. Lapham rendered distinguished service to the Procurement and Assignment Service and to the professions with which it deals. Dr. Paul C. Barton, acting executive officer in Dr. Lapham's absence, has been appointed executive officer by the directing board. The board also appointed Dr. Deane F. Brooke to the assistant executive officer's position vacated by Dr. Barton. Dr. Barton, the new executive officer, is known to most chairmen. Dr. Brooke before the war was in practice in Barrington, Ill., and has served the Procurement and Assignment Service in a dual capacity for almost two years—as liaison officer for the Public Health Service and as head of the field service section of the Central office.

COMMUNITIES IN NEED OF PHYSICIANS

The following six communities have applied to the U. S. Public Health Service for federal assistance in obtaining the services of physicians under the recently enacted law authorizing an appropriation of $200,000 for the relocation of physicians:

Pineville (Mecklenburg County), North Carolina
Star (Montgomery County), North Carolina
Waxhaw (Union County), North Carolina
Glenrock (Converse County), Wyoming
Leola (McPherson County), South Dakota
Faith (Meade County), South Dakota

Physicians interested in locating in these communities should communicate with the Surgeon General, United States Public Health Service, Washington (Bethesda Station), D. C.

NEW DISCOVERIES ANNOUNCED BY SZENT-GYÖRGYI; ARREST REPORTED

The MTI (in German) of February 16 (Hungary) states that the Biochemical Institute of Szeged University, under the direction of Szent-Györgyi, holder of the Nobel Prize, publishes an account of two important medical discoveries. Laky, a lecturer at the university, has discovered a hitherto unknown property of the blood called plasma chinin, which plays a decisive part in the process of blood coagulation. Since the lack of this material causes hereditary hemophilia, this discovery supplies medical science with the means of curing this complaint. This property will presumably also play an important part in stopping other types of hemorrhages. According to recent Stockholm reports, Szent-Györgyi has been arrested in Budapest for expressing pro-British sentiments.

Straub, another lecturer at the university, has succeeded in analyzing the chemical constituents of muscles, thereby producing a hitherto unknown type of albumin.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. J. Res. 271 has passed the House and Senate, appropriating $6,700,000 for emergency obstetric and pediatric care for the wives and infants of enlisted men in the armed forces in grades four, five, six and seven for the remainder of the present fiscal year.

Bills Introduced.—The Acting Secretary of the Treasury has submitted a draft of proposed legislation to amend the federal narcotic laws so as to bring isonipecaine within their restrictions. S. 1914, introduced, by request, by Senator George, Georgia, proposes to translate into legislation the recommendation of the Acting Secretary of the Treasury. The bill, pending in the Senate Committee on Finance, defines isonipecaine to mean "any substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name designated." S. 1901, introduced by Senator Radcliffe, Maryland, provides that there shall be in the Medical Department of the Army, in addition to such assistants to the Surgeon General as are now authorized by law, an assistant with the rank of brigadier general who shall be an officer of the Sanitary Corps. S. 1908, introduced by Senator Johnson, Colorado, for Senator Clark, Idaho, proposes to amend the Federal Food, Drug and Cosmetic Act so as to provide that any food, drug, device or cosmetic condemned under section 334 of the act shall, after entry of the decree of condemnation, be disposed of by destruction or sale or, in the case of food which is not injurious to health or otherwise unfit for human consumption, by gift to public or private charitable institutions, as the court may direct. H. R. 4777, introduced by Representative Outland, California, proposes for each fiscal year an appropriation of $50,000,000 to assist the states to establish and maintain school lunch programs.

STATE MEDICAL LEGISLATION

Louisiana

Bill Introduced.—H. 2, to amend the uniform narcotic drug act, proposes so to define narcotic drugs as to include isonipecaine, which is defined in the bill as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof by whatever trade name identified."

MEDICAL ECONOMIC ABSTRACTS

INDEMNITY SURGICAL AND OBSTETRIC PLAN RECOMMENDED

The Economics Committee of Omaha-Douglas (Neb.) Medical Society at a meeting Nov. 19, 1943 unanimously agreed to submit the following recommendations to the society:

1. The establishment of a surgical and obstetric indemnity plan immediately.
2. That such a plan be coordinated with the local Blue Cross Plan under the supervision of a committee of the Omaha-Douglas County Medical Society.
3. Studies are now under way regarding the indemnity schedule, the premium to be charged, the limitations of the contract, and so on. The result of these studies will be acted on at a subsequent meeting of the special committee and promptly reported to the society for proper action.
4. If the medical society approves the establishment of the surgical and obstetric indemnity plan, a mutual assessment company will have to be formed and $10,000 will have to be deposited with the state insurance commissioner pending the passage of an enabling act by the state legislature.
5. The committee thinks it is advisable to start at this time only the surgical and obstetric indemnity plan. Later, when more experience has been gained and sound actuarial figures are available, some form of a medical indemnity plan could be added.

MINNESOTA AND IOWA PLAN

The Minnesota State Medical Association at its recent meeting in Rochester made preparations to secure legislative action on the enabling act to permit organization of prepaid medical care plans under medical sponsorship. According to the bulletin of the Hennepin County Medical Society (April 1944) the reports of the Committee on Sickness Insurance, Committee on Medical Economics and the Presidential Address to the House of Delegates all recommended such action.

The Iowa State Medical Society at the meeting of the house of delegates approved the principle of prepayment plan for medical care on a nonprofit basis and instructed its legislative committee to prepare the necessary legislation.[1] The House of Delegates provided for a special meeting within four months to consider the report of the legislative committee.

1. J. Iowa State M. Soc. **34**: 206 (May) 1944.

DENTIST STUDY OF PREPAYMENT PLANS

The American Dental Association has appointed a Prepayment Committee with Leo J. Schoeny of New Orleans as chairman (*J. Am. Dent. A.* **31**:302 [Feb. 15] 1944). The committee has the duty of studying prepayment plans and other services to determine their applicability to dental care for certain groups of the population. It has analyzed hospital and medical care prepayment plans for this purpose. It is analyzing various dental plans to attempt to establish the principles which must govern the formation of prepayment plans and dentistry.

It is proposed that a prepayment plan be established on an experimental basis under the supervision of a state or component dental society for groups of not less than 1,000 persons and preferably for groups of 5,000 persons.

It is recognized that an experiment of this character should be guaranteed for a sufficient period to produce the information desired.

The Board of Trustees of the American Dental Association has approved the principles of this experimental program.

OFFICIAL NOTES

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

May 20. "War Nerves."
Speaker Lieut. Col. Harold C. Lueth, M. C., A. U. S., Surgeon General's Liaison Officer, American Medical Association.

May 27. "Fatal Mistakes."
Speaker, Forest E. Long, M.D., Director, School and College Safety Division, National Safety Council.

June 3. "Medicine in the Front Lines."
Speaker, Major Gen. George F. Lull, M. C., A. U. S., Deputy Surgeon General, Washington, D. C.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Election.—Dr. Charles P. Austin, Morenci, was chosen president-elect of the Arizona State Medical Association at its annual meeting April 14 and Dr. Dan Mahoney, Tucson, was installed as president. Other officers include Drs. Walter Brazie, Kingman, vice president; Frank J. Milloy, Phoenix, secretary, and Clarence E. Yount, Prescott, treasurer.

CALIFORNIA

Journal Dedicated to Howard Naffziger.—The *Journal of Nervous and Mental Disease* for May has been dedicated to Dr. Howard C. Naffziger, professor of surgery, University of California Medical School, San Francisco, by members of the staff of the school on the occasion of his sixtieth birthday, May 6.

Grant for Use in Physical Therapy.—The National Foundation for Infantile Paralysis announces a two year grant totaling $34,080 to Stanford University School of Health (women), Stanford University, to strengthen the physical therapy technician school and to prepare syllabuses and text materials for the use of physical therapy instructors and their students.

Latin Americans at University of California.—Sixteen health educators representing twelve Latin American countries are taking a special course being given for them by the new School of Public Health, University of California, Berkeley (THE JOURNAL, May 6, p. 72). The educators are being trained specifically at the request of the coordinator of Inter-American Affairs and represent Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Peru. The course consists of two sixteen week terms and will cover problems of nutrition and personal hygiene, sanitary bacteriology and environmental sanitation, general education and sociology, public health administration and health education (THE JOURNAL, Nov. 6, 1943, p. 645).

CONNECTICUT

Governor Proposes State Medical School.—Serious consideration should be given to adding a medical department to the University of Connecticut, Storrs, Gov. Raymond E. Baldwin stated in his address as principal speaker at the dinner of the recent annual meeting of the Connecticut State Medical Society. He said that the state had the responsibility for the training of physicians to take care of the people of Connecticut and that a school of medicine in the state university should be planned.

Dr. Mooney Named to Newly Created Position.—Grace Mooney, Ph.D., formerly research assistant in the Yale University School of Medicine, New Haven, has been appointed executive assistant to the secretary of the Connecticut State Medical Society. The creation of the position was authorized by the house of delegates at its special meeting in December 1943. Dr. Mooney received her doctor of philosophy degree from the Graduate School of Yale University. She has served as assistant director of the bureau of venereal diseases in the department of health in the city of New Haven, assistant in venereal disease control in the state department of health and as the assistant secretary of the Committee on Social Protection in the Connecticut War Council.

ILLINOIS

Personal.—Dr. Straub W. Shurtz, Champaign, has been given a certificate of membership in the "fifty year club" of the Illinois State Medical Society.——Dr. John P. Walsh, Wheaton, health officer of Du Page County, has been transferred to supervise a five county district health unit with headquarters at Dixon.

Chicago

Fertility Clinic.—The Illinois League of Planned Parenthood has established a clinic at 203 North Wabash Avenue, designed to help childless women to become mothers. Women who are seemingly sterile but who wish to bear children, if possible, will be provided with expert medical advice.

Dr. Alvarez Gives Ranson Lecture.—Dr. Walter C. Alvarez, Rochester, Minn., presented the Ranson Memorial Lecture, April 3, in Thorne Hall under the auspices of Phi Beta Pi Fraternity at Northwestern University. His paper was entitled "Hints on the Diagnosis of Abdominal Pain."

Health Education Director Named for Tuberculosis Institute.—Miss Florence Benell, M.S., who has been teaching hygiene, anatomy, child health and first aid at the Milwaukee State Teachers College, has been appointed director of health education for the Tuberculosis Institute of Chicago and Cook County.

Course in the Rorschach Test.—The department of neuropsychiatry, Michael Reese Hospital, announced its 1944 course in the Rorschach test June 5-9. Emphasis will be placed this year on the test as far as it indicates expectation of success in treatment. The teaching material, as in former years, will consist of Rorschach response records as obtained from patients under observation and treatment. These will be evaluated and interpreted. Clinical group sources will be the neuroses and early or latent schizophrenia.

Reading Room Named for Dr. Elliott at St. Luke's.—St. Luke's Hospital has dedicated a new reading room to Dr. Arthur R. Elliott, senior consultant physician and for many years a member of the staff. The new installation is part of a general program of expansion at the hospital, including the remodeling and removal of the hospital's library from the eighteenth to the third floor. Dr. Elliott was instrumental in obtaining funds to develop the library; $13,000 of the $17,000 obtained was used for the library itself; the remainder is to be applied to the ultimate location of the medical record room and an x-ray film museum on the third floor adjacent to the library. Provision has been made for the expansion of the library from its current total of about 9,350 volumes to about 15,000 volumes. Other plans call for new intern quarters on the fourth and fifth floors and additional wartime accommodations for nurses.

IOWA

Hospital News.—The cornerstone of the new Raymond Blank Childrens Memorial Hospital, affiliated with the Iowa Methodist Hospital, Des Moines, was laid at special ceremonies, May 14.

Special Society Election.—Dr. Erma A. Smith, Ames, was chosen president-elect of the State Society of Iowa Medical Women at its annual meeting in Des Moines, April 20, Dr. Helen Johnstone, Des Moines, was installed as president and Dr. Jeannette Jongewaard, Jefferson, was named vice president. Other officers include Drs. Ruth E. Church, Washington, secretary, and Edna K. Sexsmith Harper, Greenfield, treasurer.

Rocky Mountain Spotted Fever.—The Iowa State Department of Health has published a report on Rocky Mountain spotted fever since the first case was reported in Iowa in 1933. For an eleven year period twenty-one deaths in 122 cases have occurred, giving a death rate of 17.2 per cent. Of twenty-one fatalities, ten deaths occurred in patients under 20 and eleven in persons above that age. Seventy-six of the patients were males and 46 females.

MAINE

Druggist Fined for Sulfathiazole Sales.—The first prosecution of its kind by the Food and Drug Administration was said to have occurred in Portland, Maine, recently when a druggist was found to have been selling loose tablets of sulfathiazole in 500 tablet bottles. In 1 case a purchaser to whom he had dispensed 50 tablets for self medication had suffered serious consequences. According to the *New Hampshire Health News* the dealer in question was found guilty and sentenced to pay a fine of $1,000, the latter suspended on plea of poverty.

MARYLAND

Study of Juvenile Delinquents.—The board of estimates of Baltimore has appropriated funds to establish and maintain two area projects in the city, one of which is to be in an area predominated by Negroes and the other by white persons. It is hoped that the projects will assist in studying the methods of combating juvenile delinquency, predicated on the theory that proper planning and administration will reduce this problem. According to *Baltimore Health News* the special committee on area projects of the mayor's youth commission will be in charge of the program. While the selection of the areas has not yet been announced, it has been urged that each include about 15,000 inhabitants in a section representative of the entire city.

Dr. Riley Chosen Director of Post Mortem Examiners Commission.—Dr. Robert H. Riley, Baltimore, director of the state department of health, has been named chairman of the Maryland Post Mortem Examiners Commission. He succeeds the late Dr. William G. MacCallum, who was head of the commission from the time of its establishment June 1, 1939 until his death, February 3. Dr. Hugh R. Spencer, professor of pathology at the University of Maryland School of Medicine, Baltimore, was selected as vice chairman. The commission is responsible, with Dr. Howard J. Maldeis, Baltimore, chief medical examiner, for all the work formerly performed by the coroners in Baltimore city and the twenty-three counties of Maryland.

MICHIGAN

Dr. Robb Provides Lectureship.—A lectureship has been established at the Wayne University College of Medicine, Detroit, under the auspices of Alpha Omega Alpha, through a contribution by Dr. James Milton Robb, associate professor of surgery at the school.

Changes in Health Officers.—Dr. John H. Gilpin, Cheboygan, has resigned his position as coroner of the county to become district health officer of Cheboygan, Presque Isle, Montmorency and Alpena counties.——Dr. Buell H. Van Leuven, Traverse City, has been named health director of Chippewa County, effective April 20, with headquarters in Sault Ste. Marie. He has been serving in a similar position in Grand Traverse and Leelanau counties.——Dr. Frederick A. Musacchio has resigned as director of the St. Joseph County Department of Health to accept a similar position with the Laredo-Webb County Health Unit in Texas.

Meeting of Neurologists.—Dr. Roy A. Morter, medical superintendent of the Kalamazoo State Hospital, Kalamazoo, was chosen president-elect of the Michigan Society of Neurology and Psychiatry at its meeting in Detroit, April 27. Dr. Leo H. Bartemeier, Detroit, was installed as president. Among the speakers were:

Mr. Lee White, director of public relations, the Detroit *News*, What the Press Thinks of Psychiatrists.
Mr. William E. Dowling, prosecuting attorney of Wayne County, What Psychiatrists Can Do to Aid Justice.
Hon. Joseph A. Gillis, judge of Recorder's Court, Detroit, Psychiatrists at the Bar of Justice.
Rev. Hugh P. O'Neill, S.J., the University of Detroit, The Clergy Looks at Psychiatry.

Rapid Treatment Center for Michigan.—Space is being made available at the University Hospital, Ann Arbor, to house the Michigan Department of Health Rapid Treatment Center. The new unit will have accommodations for 150 patients and is expected to be opened in June. Requests for admission to the rapid treatment center must be made through the local health officer and to the medical officer in charge of the hospital. The average patient will not need to be kept in bed but will be able to engage in normal physical activities. Special attention will be paid to training for employment as well as education and recreation. The necessary time for a patient to remain at the center will vary from one to six weeks.

New Health Council.—A new health council has been appointed by the mayor to make a study of hospitalization and care of the sick in Flint. Members of the council include City Commissioner George Gundry, representing the city; Joseph H. Galliver, county; Dr. Leslie V. Burkett, city-county health officer; Dr. Frederick B. Miner, Genesee County Medical Society; Layton Thompson, tuberculosis association; M. G. Gorman, Clara Elizabeth Fund; Charles S. Mott, Mott Foundation; George A. Jacoby, Visiting Nurse Association; J. C. Baryton, American Federation of Labor; Harold C. Plyer, the C. I. O.; Ralph E. Gault, Hurley Hospital; William S. Ballenger, Women's Hospital; A. H. Sarvis, St. Joseph Hospital, and Harry S. Read, D.D.S., dental association.

MINNESOTA

Physician Pleads Guilty to Harrison Narcotic Violation.—On March 25, after Dr. Donald Laing Peterson, Minneapolis, had pleaded guilty in an earlier session to an indictment charging him with two violations of the Harrison Narcotic Law, he was placed on probation by Judge Gunnar H. Nordbye for a period of three years on condition that he leave Minneapolis four days later and proceed directly to the U. S. Public Health Service Hospital at Lexington, Ky., to remain there for treatment of drug addiction until he was discharged as cured. According to the state board of medical examiners, all the narcotics for which Dr. Peterson had been writing prescriptions had been diverted to his own use. Dr. Peterson is the first physician to be indicted in Minnesota in a number of years for violation of the Harrison Narcotic Law. He had been warned on several occasions by the federal bureau of narcotics to refrain from the use of derivatives of opium and had been cited by the Minnesota State Board of Medical Examiners to show cause on May 12, 1944 why his license as a physician should not be revoked because of habitual indulgence in the use of narcotics.

NEW YORK

New Medical Journal.—The *Northern New York Medical Annual* made its appearance in April. The publication, which will be issued once a year, contains news and scientific material about physicians of northern New York. Dr. Howard N. Cooper is chairman of the board of editors, other members of which include Drs. Charles A. Prudhon, Sutherland E. R. Simpson, William W. Hall, George F. J. Bock and Garner Scullard, all of Watertown. The publication is sponsored by the Jefferson County Medical Society, which hopes to use it as a medium for members in the armed forces.

Mental Hygiene Division Authorized.—The board of supervisors has approved the creation of a division of mental hygiene within the Nassau County Health Department. For the present the personnel will consist of a director who will be a psychiatrist, a psychologist, other psychiatric social workers and necessary clinical assistants. It is hoped that the unit can be started by July 1. It is expected that the New York State Department of Health will reimburse the county to the extent of 50 per cent of the estimated annual cost of $25,000, the same rate of reimbursement that is now made on all the work of the health department.

Village Insures Employees.—The village of Hempstead has insured 167 employees against medical expenses, becoming, newspapers report, the first municipal community in the United States to give its employees this benefit. Newspapers also stated that the insurance covers all the employees except police, who have their own medical and insurance plan. On April 25 three persons had already used the new insurance, although the program went into effect only April 1. Under the program the employees whose incomes are $2,500 or less get full coverage for all doctor's bills, while those getting more than that are paid indemnities against the physician's bills.

Surplus Milk Poisons Hospital Patients.—Seventy-four cases of food poisoning in one city hospital in New York were reported in the newspapers May 3. Evaporated milk had been supplied free by the government from a reported 45 million pound oversupply and was said to have been originally obtained by the government for British use and to have been kept in storage for as long as two years, in some cases, before being turned over by the War Food Administration for free distribution to hospitals and other institutions. The outbreak of the food poisoning prompted an order from the New York City Department of Health to place an embargo on 1,200 cases of the milk. Free distribution of the supply was stopped.

New York City

Internships Available.—The Hospital for Joint Diseases announces house staff appointments available to fill twelve places on the general rotating service. Four interns will be needed October 1 and eight to begin July 1, 1945. Additional information may be obtained from the hospital, 1919 Madison Avenue, New York 35.

Medical Stamp Exhibit.—An exhibition of stamps depicting nurses, hospitals, physicians and medical scientists was on display in Gimbel's stamp department May 8-15, in honor of National Hospital Day, May 12. The display was made possible by Drs. Anna R. Young, Stamford, Conn., Louis A. Sarrow, Far Rockaway, N. Y., Joseph C. Horan and Otho C. Hudson, Hempstead, N. Y., who lent their individual collections.

Eye Bank Established at New York Hospital.—What is described as the first eye bank in the United States has been established at New York Hospital, newspapers reported May 9. The unit will be used to store human corneas as they become available for later use in treating certain types of blindness. In the operation of the new bank, eyes will be collected either from living persons or from those who arrange to have them removed immediately after death, it was stated.

Blue Cross Membership Increases.—The Associated Hospital Service of New York reports that 86,250 new members, 75 per cent of the yearly total of 113,424 reported for 1943, were recorded in the first quarter of 1944. In the seventeen counties of lower New York State served by Associated Hospital Service 1,528,801 persons are now members of the Blue Cross plan. A release from the service states that the

increase in New York was the second largest reported by all Blue Cross plans in a quarter which set a new record also for total increase in the United States and Canada. The largest increase occurred in the Massachusetts plan, which is statewide. In the country as a whole an additional 793,503 employed persons and their dependents enrolled during the first three months of this year, bringing the total membership of all seventy-seven plans to 13,798,996 persons, exclusive of about 600,000 contracts suspended by members of the armed forces until their return to civil life.

Foundation Created to Care for Advanced Cancer Patients. — The National Foundation for the Care of the Advanced Cancer Patients has been incorporated in New York with Dr. Frank E. Adair as medical adviser. The newly formed group is nonsectarian and is designed to provide beds and care in already established institutions or to finance the establishment of new institutions, if necessary, to provide assistance for advanced cancer patients of "moderate means." The new foundation will have offices at 450 Seventh Avenue. In addition to Dr. Adair, other members of the organizing committee include Julius Jay Perlmutter, president of Conar Associates, merchandise brokers; Dr. Ira I. Kaplan, director of the radiation department, Bellevue Hospital, and clinical professor of surgery at New York University College of Medicine; Morris M. Bernstein, of the firm of Bernstein & Wolff, chairman of the board of the National Association of Merchandise Brokers; Mrs. Francis J. Rigney, commander in the Metropolitan area of the Women's Field Army of the New York City Cancer Committee, and Irving I. Friedman, member of the New York Bar. Sixty members comprise the sponsoring committee. The new group plans eventually to become national in scope, although in the immediate future it will concentrate on providing for the New York City area.

NORTH CAROLINA

Changes in Health Officers.—Dr. Ballard Norwood Jr., Oxford, has resigned as health officer of Granville County to enter private practice in Oxford.——Dr. Leo B. Skeen, Statesville, has resigned as health officer of Iredell County to enter the practice of medicine.

Dr. McCain Honored.—Friends gathered at the North Carolina Sanatorium for the Treatment of Tuberculosis, Sanatorium, recently to honor Dr. Paul P. McCain, who has completed thirty years as medical director and superintendent of the sanatorium. He joined the staff as assistant superintendent and chief of the medical service March 1, 1914. Dr. McCain was president of the Medical Society of the State of North Carolina in 1935 and of the National Tuberculosis Association in 1941.

New Professorship in Medical Literature.—Dr. Frederick R. Taylor, associate professor of clinical medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, has been named to a newly created position of professor of medical literature. The course in medical literature and medical writing includes instruction of the students in the relative value of various publications, the ethics of medical writing and the editing of medical papers. The course also instructs the students in the ways of keeping abreast of medical literature and stresses its importance to the physician.

OHIO

State Medical Election.—Dr. Edgar P. McNamee, Cleveland, was chosen president-elect of the Ohio State Medical Association during its annual meeting in Columbus, May 2-4, and Dr. Louis Howard Schriver, Cincinnati, was inducted into the presidency. Dr. Harry E. LeFever, Columbus, is treasurer and Mr. Charles S. Nelson, Columbus, executive secretary.

Dr. Corlett Observes Ninetieth Birthday.—Dr. William T. Corlett, professor emeritus of dermatology, Western Reserve University School of Medicine, Cleveland, observed his ninetieth birthday April 15. According to the Cleveland *Plain Dealer*, Dr. Corlett is credited with starting health visitation of public schools and establishing the department of dermatology and syphilology at Lakeside Hospital.

Personal.—Dr. Thomas F. Heatley has been appointed a member of the Toledo Board of Health to succeed Dr. Edward J. McCormick, who resigned recently.—— Dr. Charles J. Shepard, emeritus clinical professor of medicine (dermatology) at Ohio State University College of Medicine, Columbus, observed the fiftieth anniversary of his graduation at Bellevue Hospital Medical School, New York, March 17.

Alumni Association Celebrates 125th Anniversary.—On May 4 the University of Cincinnati College of Medicine Alumni Association held its 125th anniversary banquet at the Hotel Netherland Plaza. It was stated that several units of the association throughout the country held simultaneous founder's day events. Cincinnati College and the Medical College of Ohio, now integral parts of the University of Cincinnati, were chartered by legislative action in January 1819. The Medical College of Ohio opened on Nov. 1, 1820 and later merged with the Miami Medical College, founded in Cincinnati in 1852 as the college of medicine of the University of Cincinnati. At the recent celebration Dr. Tom D. Spies, associate professor of medicine at the medical school, delivered the principal address.

PENNSYLVANIA

Ninety Years of Age.—Dr. Michael J. Buck, Wilkinsburg, observed his ninety-second birthday April 13. Dr. Buck graduated at the Jefferson Medical College of Philadelphia in 1872 and the Hahnemann Medical College of Philadelphia in 1876.——Dr. John H. Sandel, Danville, celebrated his ninetieth birthday April 11. Dr. Sandel, who retired from the active practice of medicine about five years ago, graduated at the Hahnemann Medical College of Philadelphia in 1882.

Philadelphia

Personal.—Dr. Catharine Macfarlane has been elected president of the Philadelphia Division, Women's Field Army, American Society for the Control of Cancer.

Phi Delta Epsilon Lecture.—Dr. Samuel A. Levine, Boston, will deliver the Phi Delta Epsilon Lecture at Jefferson Medical College of Philadelphia, May 25, on "Some Notes Concerning Cardiac Murmurs."

SOUTH CAROLINA

Personal.—Martin D. Young, pathologist of the National Institute of Health, in charge of the institute's malaria research laboratory at Columbia, S. C., has been commissioned as sanitarian (reserve) in the U. S. Public Health Service.——Roe E. Remington, Sc.D., has resigned as chemist and director, food research department of the Medical College of the State of South Carolina, Charleston.

Alumni Plans Lectureship for Dr. Wilson.—At a meeting of the alumni association of the Medical College of the State of South Carolina, Charleston, April 12 in Columbia it was decided to establish a lectureship in honor of Dr. Robert Wilson, who recently retired as dean of the medical school. Dr. Joseph I. Waring, Charleston, was elected president of the alumni association to succeed Dr. Strother Pope, Columbia. Other officers are Dr. James T. Quattlebaum, Columbia, vice president, and Dr. Richard W. Hanckel Jr., Charleston, secretary and treasurer. Announcement of a $1,500 gift was also made toward the expansion program at the university planned to include a postgraduate seminar to be held annually at the school.

UTAH

Dr. Dippel Resigns at Utah.—Dr. A. Louis Dippel has resigned as professor and head of the department of obstetrics and gynecology at the University of Utah School of Medicine, Salt Lake City, newspapers report. Dr. Emil G. Holmstrom, assistant professor of obstetrics and gynecology, has been named acting head until a successor is chosen.

WEST VIRGINIA

License Revoked.—The license of Dr. Warren Burton Taylor Jr., Logan County, who was recently convicted of second degree murder in the death of Lee Porter, 38 year old miner of Ethel, was revoked. Dr. Taylor is said to be serving a term of five to eighteen years in the state penitentiary at Moundsville.

Personal.—Dr. Irvine Saunders, Welch, has been appointed medical superintendent of the Welch Emergency Hospital, succeeding Dr. Frank E. LaPrade, who retired several months ago because of ill health. Dr. James C. Hutchinson, who has been serving as acting superintendent, is now on the surgical staff at Mayo Clinic, Rochester, Minn. Dr. Saunders, who has been on the staff of Grace Hospital at Welch since 1942, is secretary of the McDowell County Medical Society.

Reciprocal Agreement with Kentucky. — The public health council of West Virginia at a meeting in Charleston in May approved a new reciprocal agreement with Kentucky for the licensing of physicians. Reciprocal relations have been maintained for the past several months under a "gentlemen's

agreement" between the two health departments of the two states, but the recent meeting made the action official. The session was attended by Dr. Philip E. Blackerby, Louisville, state health commissioner of Kentucky.

GENERAL

National Science Fund Moves.—The National Science Fund of the National Academy of Sciences has moved its offices to the Academy of Sciences, 2101 Constitution Avenue, Washington 25, D. C., from 515 Madison Avenue, New York.

Society News.—The American Congress of Physical Therapy will hold its twenty-third annual scientific and clinical session at the Hotel Statler, Cleveland, September 6-9. Marion G. Smith, B.Sc., 30 North Michigan Avenue, Chicago 2, is executive secretary of the congress.——The Southern Medical Association announces that it will hold its annual meeting at the Municipal Auditorium, St. Louis, November 13-16.

Research Council Fellowships.—At a recent meeting of the medical fellowship board of the National Research Council, Washington, D. C., fellowships in the medical sciences were awarded to Dr. Sidney S. Sobin, Harvard Medical School, Boston, and Dr. Harry A. Wilmer, Johns Hopkins University School of Medicine, Baltimore. Two renewals were made in fellowships in the filtrable viruses to Edward H. Anderson, Ph.D., Vanderbilt University, and Dr. I. William McLean Jr., Duke Hospital. Dr. Paul S. Rubin, Johns Hopkins University, was appointed to a fellowship in orthopedic surgery.

Levi Memorial Hospital Offers Records to Medical College for Baruch Study.—The trustees of the Leo N. Levi Memorial Hospital, Hot Springs National Park, Ark., at their annual meeting in New York, May 6, offered to turn over to the Medical College of Virginia, Richmond, the hospital's entire facilities and scientific records as their contribution to participate in the Baruch program for research in physical medicine. The Medical College of Virginia was recently designated as one of the beneficiaries under the million dollar program sponsored by Bernard M. Baruch (THE JOURNAL, April 29, p. 1311).

American Laryngological Association.—The sixty-sixth annual meeting of the American Laryngological Association will be held at the Waldorf-Astoria, New York, June 7-8, under the presidency of Dr. Charles J. Imperatori, New York. Among the speakers will be:

Dr. Samuel J. Crowe, Baltimore, The Local Use of Sulfadiazine Solution, Radon, Tyrothricin and Penicillin in Otolaryngology.
Dr. Samuel Salinger, Chicago, Traumatic Deformities of the Nasal Septum.
Lieut. Col. Paul A. Campbell, M. C., Aerosinusitis: A Résumé.
Dr. Chevalier L. Jackson, Philadelphia, Inter-American Relations in Otolaryngology.
Dr. Joseph D. Kelly, New York, Problems in the Surgical Treatment of Bilateral Abductor Muscular Paralysis of the Larynx.

American Ophthalmological Society.—The eightieth annual meeting of the American Ophthalmological Society will be held at the Homestead, Hot Springs, Va., May 29-31, under the presidency of Dr. John Green, St. Louis. Among the speakers will be:

Drs. Peter C. Kronfeld and Joseph S. Haas, Chicago, Further Study of the Glaucoma Due to Peripheral Anterior Synechiae Following Delayed Restoration of the Anterior Chamber After Cataract Operation.
Dr. Algernon B. Reese, New York, Deep Chamber Glaucoma Due to the Formation of a Cuticular Product in the Filtration Angle.
Dr. Frank D. Carroll, New York, Visual Symptoms Caused by Digitalis.
Drs. Frank B. Walsh and Walter E. Dandy, Baltimore, The Pathogenesis of Intermittent Exophthalmos.
Drs. Jonas S. Friedenwald and William H. Buschke, Baltimore, Some Factors Concerned in the Mitotic and Wound Healing Activities of the Corneal Epithelium.

Society for Research in Psychosomatic Problems.—The annual meeting of the American Society for Research in Psychosomatic Problems will be held at the Stevens Hotel, Chicago, June 10-11, under the presidency of Dr. Tracy J. Putnam, New York. Speakers will include:

Drs. John Romano and George L. Engel, Cincinnati, Studies of Syncope: Vasodepressor, Carotid Sinus and Hysterical Syncope.
Dr. Milton Rosenbaum, Cincinnati, Psychosomatic Factors in Pruritus.
Dr. Helen Flanders Dunbar and George H. Soule Jr., New York, Suggestions Preliminary to a Psychosomatic Nosology.

An afternoon session Sunday will be devoted to "The Role of the Autonomic Nervous System in Functional Disorders" with the following speakers: Robert G. Heath, P. A. Surg., U. S. Public Health Service Reserve, Drs. Mandel E. Cohen and Paul D. White, Boston, Col. William Warner, R. C. A. M. C., and Dr. Stephen Rothman, Chicago.

Rabies Prevalent in 1943.—An Associated Press summary, published April 11, indicated that rabies was more widespread last year than any time in five years, with preliminary government reports showing 33 human deaths from rabies while 7,348 animals died from the disease. In 1942 there were only 28 human deaths and 7,137 animal deaths. The report indicated that the disease was widespread in Washington, D. C.; 104 animals were found to be rabid and 110 persons were bitten. The report stated that only 4 cases of rabies had been reported in Washington in the decade 1932-1942 and all were traced to dogs which came from other areas.

Meeting of Tuberculosis Physicians.—The annual meeting of the American Academy of Tuberculosis Physicians will be held at the Palmer House, Chicago, June 13, under the presidency of Dr. Karl J. Henrichsen, Chicago. Among the speakers on the program will be:

Capt. Hyman E. Bass, M. C., Tuberculosis and Coccidiomycosis.
Dr. Irvin S. Neiman, Chicago, The Chronological Appearance of Allergy and Immunity in Experimental Tuberculosis.
Dr. Truman S. Potter, Chicago, Facts and Reflections Bearing on Problem of Prevention of Tuberculosis.
Dr. Charles F. Taylor, Norton, Kan. (subject not announced).
Dr. Harry J. Corper and Maurice L. Cohn, Ph.D., Denver, Demonstration of the Transdermal Tuberculin Test.
Dr. Zoltan Galambos, Chicago, The Clinical Significance of Hypersensitivity in Tuberculosis.
Dr. Charles K. Petter, Waukegan, Ill., Experiences with Diasone in Clinical Tuberculosis.
Dr. Marie Severac, George W. Raiziss, Ph.D., and John C. Moetsch, Philadelphia, Diasone and Its Chemotherapeutic Properties.
Dr. Karl E. Kassowitz, Milwaukee, Healed Subclinical Miliary Tuberculosis.
Dr. Oscar S. Levin, Denver, The Tuberculologist and Present Tuberculosis Statistics.

At a luncheon meeting Dr. Edward H. Hume, director of the Christian Medical Council for Overseas Work, New York, and formerly visiting professor of the National College of Medicine in Shanghai, China, will discuss "Tuberculosis in China" and Dr. Petter "Modern Sanatorium Planning and Functioning."

Government Services

Portrait of Colonel Jones

At special ceremonies, May 13, the friends of the Army Medical Library presented a portrait of Col. Harold W. Jones, U. S. Army, retired, Washington, D. C., to the library in recognition of his contribution to the advancement of medicine and particularly his adoption of microfilm copying as a legitimate extension of the service rendered by the library to those at a distance. A feature of the presentation was inspection of the recently enlarged installation of the photoduplication service of the Army Medical Library.

Dr. Dunbar Named Chief of Food and Drug Administration

Paul B. Dunbar, Ph.D., associate commissioner of the Food and Drug Administration, Federal Security Agency, on May 6 was appointed commissioner to succeed Walter G. Campbell, who retired April 30 under the voluntary provisions of the retirement act. Dr. Dunbar received his doctor of philosophy degree in chemistry from Johns Hopkins University, Baltimore, and has been associated with Mr. Campbell for thirty-seven years. Mr. Campbell entered the service as chief when the food and drug act of 1906 became effective, and organized, under the general direction of the late Dr. Harvey W. Wiley, the small staff of food and drug inspectors on a nationwide basis and formulated plans for inspection operation. In 1916 he was named assistant chief of the bureau of chemistry under the late Dr. Carl L. Alsberg and was placed in charge of the food and drug law enforcement operations. In 1923 he became director of regulatory work in the department of agriculture and in 1927 organized the Food and Drug Administration, which he has since continuously directed. When the Food and Drug Administration was transferred from the department of agriculture in 1940, Mr. Campbell was designated as commissioner of food and drugs. It was stated that he was largely instrumental in presenting the facts that led to the enactment of the Federal Food, Drug and Cosmetic act in 1938.

CORRECTION

The Rickettsial Diseases.—In the article by Dr. R. E. Dyer in THE JOURNAL, April 22, the word "typhus" in the second column of page 1170, twenty-third line, should read "spotted fever."

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 15, 1944.

Hysterical Nature of the So-Called Pernicious Vomiting of Pregnancy

For thirty years Sir Arthur Hurst has been convinced that the so-called pernicious vomiting of pregnancy is always hysterical. But the condition is still insufficiently understood and, while there should be no mortality, fifty or sixty deaths are registered annually. Hurst's teaching was accepted by some leading obstetricians and in the "Midwifery" by Ten London Teachers the belief that a toxic form of the vomiting of pregnancy exists was rejected. But most modern textbooks still discuss the differential diagnosis between the toxic and the nervous form of pernicious vomiting of pregnancy. Hurst has therefore returned to the attack in the *Clinical Journal*. Gibberd has rewritten the chapter on hyperemesis gravidarum in the "Midwifery." He teaches that the rare cases in which Korsakoff's syndrome of peripheral neuritis with mental symptoms develops are toxic in origin, because of the resemblance of the clinical and pathologic findings to those produced by alcohol. But Hurst points out that it has been proved that alcohol is never per se a cause of the syndrome, which is really the result of the associated vitamin B deficiency. Whitridge Williams believed that there was no clinical distinction between the nervous and the toxemic cases and that the only reliable means of diagnosis was estimating the ammonia coefficient of the urine. An increase of this pointed infallibly to toxic vomiting and was an urgent indication for prompt termination of the pregnancy, as otherwise death would occur in a few days. But Hurst points out that the high ammonia coefficient is not due to toxemia but to the starvation consequent on the vomiting. The following is an illustration: A woman aged 32 was admitted to Guy's Hospital and a diagnosis of pernicious vomiting of pregnancy was made, as Dr. J. H. Ryfell found that the ammonia index was 28. There was a large amount of diacetic acid in the urine. The patient vomited everything. Her pulse was 136, she was emaciated and her skin was dry and inelastic. Her tongue was dry and covered with dark brown fur. Her mind was clear. She was told by her father that she would have a bad time, as her mother vomited all the time she was carrying the patient. Hurst explained to her that there was no good reason why she should have continued to vomit after the first six weeks, in which vomiting is normal, and that her father's suggestion at such a time was all that was needed to lead to her present condition. He talked to her for about ten minutes and succeeded in convincing her that she would not vomit again. Later he returned to her and watched her eat buttered toast and tea, which she had chosen for her first meal. She felt no inclination to vomit. She had a good supper but vomited her breakfast next morning. She was transferred to a better psychologic environment and had no further trouble. Eleven months after labor she again became pregnant and at once began to vomit. The vomiting became so severe that her doctor discussed terminating the pregnancy. She was again admitted, and the vomiting yielded to psychologic treatment.

Hurst contends that his case shows that no reliance can be placed on either the clinical or the chemical diagnosis of toxemic vomiting of pregnancy. He does not believe that such a condition exists apart from the vomiting associated with eclampsia and acute hepatic necrosis. It should be noted, however, that jaundice, caused presumably by subacute hepatic necrosis, may result from hysterical vomiting, and that it rapidly disappears with an adequate diet. The division into nervous and toxemic cases is fallacious. All patients are nervous, but the word "hysterical" should be substituted for "nervous," as the condition is typically hysterical and curable by psychotherapy.

New Inquiry Into the Causes of Illness

The facts relating to ill health differ from those relating to mortality and are not so well known. In a communication to the *Times* Sir E. Farquhar Buzzard points out that the collection and analyses of the causes of illnesses of all kinds, nonfatal as well as fatal, are a need which is being increasingly recognized. The Nuffield Provincial Hospitals Trust has established experimental regional records bureaus for the study and analysis of the prevalence and distribution of the various forms of sickness. One bureau is housed at the Nuffield Institute of Social Medicine, Oxford. A leading clinician, Prof. J. A. Ryle, who occupies the chair of social medicine, has undertaken the general control of this bureau. At the early stage the work is limited to collecting information in respect of Oxford City and the local hospitals. This limited task is expected to involve consultation of some 165,000 health and sickness records per annum. Buzzard stresses the need for knowledge of the facts in relation to ill health as distinct from mortality. With the aid of the new classification of diseases and injuries published by the Medical Research Council and the cooperation of hospital and other local authorities it is hoped to discover whether, in respect of a given area, an integrated picture of health and sickness can be made available to those charged with planning postwar medical services, preventive and curative, domiciliary and institutional.

BUENOS AIRES

(From Our Regular Correspondent)

April 4, 1944.

Poliomylitis in Argentina

The National Department of Hygiene recently published a report giving the number of cases of paralytic forms of poliomyelitis in the federal capital in the course of the epidemic from October 1942 to March 1943. Small foci of cases of poliomyelitis were observed in various parts of the country in the course of the epidemic, which started in the central zones of the province of Buenos Aires and the federal capital in October 1942. The number of new cases in remote areas of the province increased as the number of cases in the areas previously involved decreased. A peculiarity of this epidemic was the great number of infants from birth to 1 year of age who had the disease.

Drug Addicts to Be Registered

Reporting drug addiction is obligatory for physicians, dentists and pharmacists who are informed of the habituation in the practice of their profession. The Office for the Control of Narcotics, which is a branch of the Department of Public Health and Social Aid, will carry records of all drug addicts, who will then receive proper medical care during and after intoxication. Professional men failing to report known cases will be fined. In case of recurring negligence they will be temporarily deprived of their licenses. Some complementary measures for the correction of addicts, such as confinement and interdiction of certain civil privileges, will be probably resorted to also.

First Pan American Congress of Mental Hygiene

The First Pan American Congress of Mental Hygiene will be held consecutively in Buenos Aires and Rio de Janeiro. Problems of postwar hygiene and sanitation will receive special attention. Dr. Eugenio A. Galli, the secretary of public health and social aid, and Dr. Gonzalo Bosch are the honorary and active presidents of the congress. Negotiations are already under way to establish committees in the twenty-one American republics and Canada for the formation of a central committee.

BRAZIL

(From Our Regular Correspondent)

April 4, 1944.

Regulations on Use of Quinine Salts

The shortage of quinine salts is acute in Brazil, because it has been impossible to import any quantity of the drug during the current year. Because an important part of the present stock is indispensable for the treatment of cases of malaria, the government has decided to put into force some measures to control the situation. Following a recommendation of the ninth Pan American Sanitary Conference the Division of Pharmacy and Chemistry of the National Department of Health will not license, from now on, any pharmaceutical preparation for the treatment of malaria that does not contain the minimum of 0.25 Gm. (about 4 grains) of quinine salts per unit (pill, tablet, confection, ampule or capsule). The division will make a revision of the licenses already issued for all such preparations in order to comply with this regulation. During this period of shortage of quinine no new pharmaceutical preparation containing quinine salts shall be licensed if it is not intended to be used for the treatment of malaria, and also a revision of the licenses of all the preparations already in use will be done in order to force the use of other drugs in the formulas instead of quinine. By so doing the National Department of Health is reserving the stock of quinine for the treatment of malaria.

Antitoxic Principle of Liver

At a recent meeting of the St. Lukas Medical Society Dr. J. Lacaz de Morais reported the action of various commercial products containing the active antitoxic principles of liver on the arterial blood pressure (Ludwig method), the cardiac rhythm, the pulse oscillation, the volume of the spleen (oncography) and the thoracic respiratory rhythm (pneumography) in the dog, their action on the vessels of rabbits' ears (Pissemsky's method), on isolated rabbit's heart (Langendorff's method), on isolated intestine and uterus of guinea pigs (Schultz-Dale's tests) and their intradermic reaction (Lewis's test). These experiments have been repeated with other substances encountered in the commercial products mentioned (adrenal cortex extract, nicotinic acid, pantothenic acid and thiamine). Dr. Lacaz withdrew and measured the histamine (Barsoun-Gaddum-Code method) found in various products analyzed in amounts which ranged from zero to 64 Gm. per cubic centimeter of liver extract available in the market. The histamine was found to be the direct cause of the bad effects obtained; its presence depends on lack of technic in the preparation of the commercial products mentioned containing the antitoxic principle of liver.

Death of Dr. J. de Castro Teixeira

Dr. J. de Castro Teixeira, head of the Division of Virus of the Oswaldo Cruz Institute, died recently at the age of 38. With the death of Dr. Teixeira, Brazilian medicine has suffered the loss of one of its most brilliant representatives, and the institute has been deprived of one of its leading scientists, an exceptionally efficient and capable worker. As soon as he graduated from the University of Rio de Janeiro Dr. Teixeira began at the Oswaldo Cruz Institute his career of investigation in the then new field of virus diseases, in which he became an accomplished specialist. Since the opening of the Rockefeller Foundation Laboratory of Rio de Janeiro devoted to the study of virus diseases in general and yellow fever in particular, Dr. Teixeira has been connected with that institution, which granted him, a few years ago, a special fellowship to study his specialty in the United States. Recently, since Brazilian health authorities feared the importation of influenza epidemics striking Great Britain and the United States, Dr. Teixeira, in close association with the Rockefeller Laboratory, worked in the production of influenza vaccine, profiting by the presence in Rio de Janeiro of Dr. Richard M. Taylor, a specialist in the epidemiology of influenza, and Dr. Edwin H. Lennette, a leading authority in virus diseases. Dr. Teixeira's name will be revered in the Oswaldo Cruz Institute along with the names of Oswaldo Cruz, Carlos Chagas, Gaspar Vianna and Ezequiel Dias as one of the greatest workers of that institution.

Mortality in a Psychiatric Hospital

According to figures from the latest annual report of Dr. Edgard de Almeida, director of the Praia Vermelha Psychiatric Hospital of Rio de Janeiro, the death rate of the inmates of that institution is declining sharply as operating conditions in the institution are being improved. This hospital belongs to the government of the Union, which still administers some of the health problems of the Federal District (Rio de Janeiro city) and receives patients who, for the most part, have some advanced form of mental ailments. The hospital was operated up to 1942 under poor conditions. The average annual mortality for a few years before 1942 was 33 per cent, but as the excessive number of patients was progressively corrected by the transfer of chronic patients to a psychiatric colony in the suburbs of the city (Colonia Juliano Moreira) and as the food and medical and nursing care was improved the mortality fell to 19 per cent in 1942 and to 4.5 per cent in 1943. There were 1,404 patients in the hospital in 1942 and 814 in 1943 in the same quarters. Dysentery and other intestinal troubles were prevalent among the intercurrent diseases that caused death.

Brief Items

The Brazilian Society of Biology elected to its governing board for the year 1944 Drs. Guilherme Lacorte, Gilberto Villela, Cassio Miranda, Lauro Travassos, M. Ozorio de Almeida and H. C. Souza Araujo.

Dr. Manoel J. Ferreira has been elected president of the Brazilian Society of Hygiene and Public Health for the year 1944. Dr. Ferreira was the field director of the campaign that succeeded in the eradication of Anopheles gambiae from the northeast section of Brazil (1939-1941), in cooperation with Drs. Fred L. Soper and D. Bruce Wilson of the Rockefeller Foundation.

Marriages

AUGUSTUS WILLIAM ANDERSON, Hammond, La., to DR. CAROLYN D. TALLEY of Dallas, Texas, in New Orleans in April.

WALTER DICKENSON WOODWARD, Richmond, Va., to Mrs. Alice Myrtle Nevins in Clifton, S. I., N. Y., April 15.

FRANCIS JAMES GRANT, Newark, N. J., to Miss Catherine Wilson Furlong of Charleston, S. C., April 15.

JAMES SAMUEL GARNER JR., Rome, Ga., to Miss Alice Victor Tate in Calhoun Falls, S. C., March 18.

WILLIAM ANDREW SWEAT, Corinth, Miss., to Miss Martha Thomas Oursler of Humboldt, Tenn., April 8.

EDMUND R. BLOWER, Akron, Ohio, to Miss Anna Dean Burks of Chapel Hill, N. C., April 29.

JOHN M. JOHNSON, Manchester, N. H., to DR. MARY B. FINCK of Westfield, N. J., March 18.

JOHN L. LA MOTTE, Half Moon Bay, Calif., to Miss Doris Helene Irwin of Belmont in April.

DONALD C. CONRAD, Middletown, Pa., to Miss Zenna M. Beckey in Jackson, Miss., April 9.

WILLIAM THOMAS PAYNE III to Miss Mary Frances Estes, both of Dallas, Texas, in March.

JOHN M. CAMERON, Faunsdale, Ala., to Miss Harriet Connor of Peoria, Ill., March 11.

CHARLES B. OLIM, Memphis, Tenn., to Miss Dorothy Marie Beck of Chicago, April 6.

JOHN O. RYDEEN to Miss Olivee Maria Nadonley, both of Norfolk, Va., March 30.

Deaths

Jonas Samuel White, Salisbury, Md.; Jefferson Medical College of Philadelphia, 1893; fellow of the American College of Surgeons; served during the Spanish-American War, the Philippine Insurrection and World War I; lieutenant in the medical reserve corps of the U. S. Army from 1919 to 1929; at one time on the visiting staffs of the Miller, St. Luke's and St. Joseph's hospitals in St. Paul and associated with the Civilian Conservation Corps in Fort Riley, Kan., Fairbury, Neb., Fort Crook, Neb., Hinckley, Minn., Red Wing, Minn., and Bayport, Minn.; formerly on the staff of the Veterans Administration Facility in Perry Point, Md.; died in the Peninsula General Hospital February 20, aged 72, of cerebral hemorrhage, arteriosclerosis and hypertension.

Daniel E. Ricardo ✠ Chicago; National Medical University, Chicago, 1904; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905, where he later served as assistant in clinical surgery; professor of orthopedic surgery at the Chicago Hospital College of Medicine; served as civil service health officer for the Chicago Health Department from January 1907 until January 1910, when he resigned; on the staffs of the Jackson Park and Woodlawn hospitals; medical examiner for the Selective Service System; died April 17, aged 70, of angina pectoris and coronary occlusion.

Fred Yohn Cronk ✠ Tulsa, Okla.; Johns Hopkins University School of Medicine, Baltimore, 1907; fellow of the American College of Surgeons; a director of the Tulsa County Public Health Association; for many years chief surgeon for the Mid-Continent Petroleum Corporation; adviser for the Selective Service System; member of the staffs of the St. John's and Hillcrest hospitals; at one time chief surgeon at the Methodist Hospital, Guthrie; member of the Rotary Club of Tulsa and the Knife and Fork Club; died February 13, aged 61, of coronary thrombosis.

Will Otto Bell, Seattle; Hahnemann Medical College and Hospital, Chicago, 1905; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; member of the Washington State Medical Association, American Academy of Ophthalmology and Otolaryngology, Western Ophthalmological Society and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; consulting ophthalmologist, King County Hospital; died February 3, aged 67, of pulmonary embolism.

Raymond Lent Baker, Utica, N. Y.; New York University Medical College, New York, 1898; formerly served as surgeon for the police and fire bureaus and as deputy health officer; member of the staff of the Faxton Hospital; died March 17, aged 67.

James Bell Anderson ✠ Yazoo City, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1896; died in the King's Daughters Hospital March 14, aged 71, of pneumonia.

Charles W. Ash, Bay City, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; died in the General Hospital March 4, aged 66, of hypertrophic cirrhosis of the liver and a fracture of the right femur following a fall.

Samuel Cecil Austin, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1908; died in a local hospital March 11, aged 66, of injuries received in an automobile accident March 7.

Hart B. Baxter ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1891; died March 16, aged 73, of cerebral hemorrhage.

Frank J. Berger, Chicago; National Medical University, Chicago, 1902; died in the American Hospital March 31, aged 86, of carcinoma of the prostate.

Eugene Orleans Boggs, Spring, Texas; St. Louis College of Physicians and Surgeons, 1892; honorary member of the State Medical Association of Texas and member of the Association of Railway Surgeons of Texas; served as president of the chamber of commerce; died in Corpus Christi March 15, aged 77, of heart disease.

Eugene P. Bowers, Vincennes, Ind.; Barnes Medical College, St. Louis, 1905; on the staff of the Good Samaritan Hospital; died March 1, aged 66, of pneumonia and pulmonary infarct.

William Francis Brady ✠ St. Petersburg, Fla.; Tufts College Medical School, Boston, 1909; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; served as visiting surgeon at the Providence Hospital, Holyoke, Mass.; died February 28, aged 58, of coronary thrombosis.

Julius Brandwein ✠ New York; Eclectic Medical College, Cincinnati, 1925; on the staffs of the Manhattan General and Downtown hospitals; died March 7, aged 46, of coronary thrombosis.

Charles Hutchison Brisbin, Lewistown, Pa.; Jefferson Medical College of Philadelphia, 1890; died in Malvern February 23, aged 76.

George Greenleaf Bulfinch, Brookline, Mass.; Harvard Medical School, Boston, 1874; member of the Massachusetts Medical Society; died in Natick March 14, aged 95, of generalized arteriosclerosis.

Lyman Lyndon Bunker, Fernandina, Fla.; St. Louis College of Physicians and Surgeons, 1909; member of the Florida Medical Association; served as vice president of the Nassau County Medical Society; during World War I served as a major in the medical corps of the U. S. Army and as a surgeon in charge of Biltmore Hospital number 12 at Asheville, N. C.; for many years Nassau County physician; died in St. Vincent's Hospital, Jacksonville, March 8, aged 67.

Charles William Bush, Boston; Boston University School of Medicine, 1899; fellow of the American College of Surgeons; consultant, Massachusetts Memorial Hospitals; died in the Hahnemann Memorial Hospital, February 25, aged 71.

Arthur Jay Button, Hackensack, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1906; formerly owner of the Holman Hospital, Pine River, and the General Hospital, Greenbush; served as medical director of the Hiddenwood Hospital; died February 26, aged 74, of tumor of the right lung.

Lenore Nelson Carlisle ✠ Hampton Bays, N. Y.; Woman's Medical College of Pennsylvania, Philadelphia, 1907; died March 19, aged 70.

William Thomas Cluney, Chicago; Northwestern University Medical School, Chicago, 1901; at one time on the staff of the Medfield State Hospital, Harding, Mass.; died March 2, aged 65, of pneumonia.

Michael Joseph Coffey, Newark, N. J.; Baltimore Medical College, 1909; member of the Medical Society of New Jersey; died March 2, aged 65, of hypostatic pneumonia.

Robert Williams Cooper ✠ Shreveport, La.; University of Pennsylvania School of Medicine, Philadelphia, 1923; member of the Radiological Society of North America, Inc., and the American College of Radiology; specialist certified by the American Board of Radiology, Inc.; radiologist at the Shreveport Charity Hospital and the T. E. Schumpert Memorial Sanitarium; secretary of the Shreveport Clinic; died in Galveston, Texas, March 13, aged 46.

Eliphalet A. Cornell, Sault Ste. Marie, Mich.; Michigan College of Medicine and Surgery, Detroit, 1892; member of the Michigan State Medical Society; served as coroner for many years; died February 19, aged 81.

John Emmett Crawford ✠ Bartlesville, Okla.; University of Nashville (Tenn.) Medical Department, 1903; member of the staff of the Washington County Memorial Hospital; died March 19, aged 73, of coronary thrombosis.

John Joseph Curtin ✠ Waltham, Mass.; Harvard Medical School, Boston, 1908; school physician; member of the staff of the Waltham Hospital; died March 10, aged 61, of coronary disease.

Byron Danford ✠ Athens, Ohio; University of Cincinnati College of Medicine, 1924; served during World War I; died in the Sheltering Arms Hospital March 1, aged 44, of injuries received in an automobile accident.

Joseph Steven Deane, Corona, N. Y.; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1914; member of the Medical Society of the State of New York; served in the medical corps of the Hungarian army during World War I; died in the New York Post-Graduate Medical School and Hospital, New York, March 8, aged 55, of chronic nephritis.

John C. Delprat ✠ Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1894; Northwestern University Medical School, Chicago, 1903; fellow of the American College of Surgeons; for thirteen years chief surgeon at the

Cook County Hospital; attending surgeon at the Illinois Central Hospital, where he died March 2, aged 76, of carcinoma of the colon.

Gregg Arthur Dillinger, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; formerly city councilman; served in France during World War I as a lieutenant colonel with the 28th Division; a member on the board at Carnegie Library; died in the Elizabeth Steel Magee Hospital March 1, aged 72, of pneumonia and heart disease.

Andrew B. Drafts, Hendersonville, N. C.; University of Virginia Department of Medicine, Charlottesville, 1896; died in the Mission Hospital, Asheville, March 3, aged 72, of a fractured hip received in a fall and carcinoma of the prostate.

Curran Bertram Earle ✠ Greenville, S. C.; University of Maryland School of Medicine, Baltimore, 1896; past president of the Greenville County Medical Society and the South Carolina Medical Association; served as a major in the medical officers' reserve corps during World War I; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; formerly chairman of the city board of health; on the staffs of the Greenville General and St. Francis hospitals; died March 21, aged 68, of heart disease.

Nicholas Henry Ellis, Williamstown, Ky.; Kentucky University Medical Department, Louisville, 1904; formerly health officer of Grant County; died March 5, aged 76.

Harry Richard Silas Emes, Niagara Falls, N. Y.; University of Buffalo School of Medicine, 1904; member of the Medical Society of the State of New York; on the staffs of Niagara Falls Memorial and Mount St. Mary's hospitals; county coroner; died March 20, aged 68, of coronary thrombosis hypertension and arteriosclerosis.

Cortez Ferdinand Enloe, Jefferson City, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; member of the Missouri State Medical Association; at one time secretary and commissioner, state board of health of Missouri; served as director of the board of penal institutions; vice president of the Cortez King Brand Mines Company; on the staff of St. Mary's Hospital; died March 7, aged 63, of sarcoma.

Isaac Ferree, Livonia, Ind.; Kentucky School of Medicine, Louisville, 1880; died March 1, aged 89, of cerebral hemorrhage.

James J. Flynn, Missoula, Mont.; John A. Creighton Medical College, Omaha, 1906; member of the Medical Association of Montana; for many years Missoula County physician; served during World War I; on the staff of St. Patrick Hospital, where he died February 20, aged 62, of hypertensive cardiovascular disease.

Casper Hartman Foote, Annawan, Ill.; St. Louis University School of Medicine, 1905; instantly killed March 14, aged 70, when struck by a train.

William Tipton Forman, Grand Ledge, Mich.; Chicago Homeopathic Medical College, 1904; died March 11, aged 67, of heart disease and bronchial asthma.

James Henderson Fowler, Harrison, Ark.; Memphis (Tenn.) Hospital Medical College, 1907; member of the Arkansas Medical Society and past president and secretary of the Ninth Councilor District; past president of the Boone County Medical Society; died March 10, aged 69.

Saul Hyman Franks ✠ Cleveland; University of Pittsburgh School of Medicine, 1913; for many years associated with the city health department; served as resident physician at the Warrensville Chronic Hospital, Warrensville, Ohio; died February 24, aged 56, of heart disease.

William Frieder ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1906; served as examining physician at the Governors Island selectee induction station; assistant surgeon at the Hospital for Ruptured and Crippled; died March 9, aged 60.

Hermon Aaron Gerbig, Independence, Kan.; Chicago College of Medicine and Surgery, 1908; member of the Kansas Medical Society; died February 28, aged 66, of coronary thrombosis.

Hugh Vincent Gillson, Paterson, N. J.; University of Maryland School of Medicine, Baltimore, 1914; member of the Medical Society of New Jersey; served overseas as a captain in the medical corps of the U. S. Army during World War I; chief medical director of the public schools; on the staff of St. Joseph's Hospital; died February 18, aged 55, of carcinoma.

Thomas Massey Gilmore, Union, Ore.; Omaha Medical College, 1901; served during World War I; died February 19, aged 68, of coronary thrombosis.

Paul Conde Graham, Columbus, Ind.; Medical College of Indiana, Indianapolis, 1903; member of the Indiana State Medical Association; served during World War I; died in the Methodist Hospital, Indianapolis, February 25, aged 64, following an operation for carcinoma.

Everett Edwin Gray ✠ Marysville, Calif.; Cooper Medical College, San Francisco, 1911; served during World War I; died in the Rideout Memorial Hospital February 6, aged 56, of coronary occlusion.

Adolph Greenstein ✠ New York; University and Bellevue Hospital Medical College, New York, 1909; specialist certified by the American Board of Otolaryngology; examining physician for local draft board number 27; attending otolaryngologist to the Beth David Hospital; died in the Paul Kimball Hospital, Lakewood, N. J., March 8, aged 58, of coronary thrombosis.

John Brightbill Groh ✠ Lebanon, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; at one time health officer; on the staff of the Lebanon Sanatorium; died February 7, aged 84, of myocarditis.

Leon William Hackett ✠ Washington, N. J.; Jefferson Medical College of Philadelphia, 1923; past president and secretary of the Warren County Medical Society; served during World War I; died March 11, aged 46, of coronary thrombosis and arteriosclerosis.

James Elbert Harris, New York; New York Homeopathic Medical College and Hospital, New York, 1896; served as a medical inspector and eye surgeon for the board of health; formerly on the staff of New York Ophthalmic Hospital; died March 9, aged 68.

Raymond Willard Hawkins ✠ Rochester, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1920; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; assistant otolaryngologist, Strong Memorial Hospital; attending otorhinolaryngologist at the Highland and Rochester General hospitals; died in Conesus March 30, aged 49, of coronary occlusion.

Victor Lamar Henton, Decatur, Miss.; Emory University School of Medicine, Atlanta, Ga., 1915; on the staff of the Newton Infirmary, Newton; died in a Meridian hospital March 18, aged 52, of carcinoma of the throat.

William B. Heryford, Maryville, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1886; died February 10, aged 81, of a ruptured meningeal artery of the brain.

Walter Hastings Jones, New York; New York Homeopathic Medical College, New York, 1886; died in the Bellevue Hospital March 10, aged 82.

James Alphonsus Kearney, Ossining, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1919; member of the Medical Society of the State of New York; served overseas with the Canadian army during World War I; physician, Sing Sing Prison; on the staff of Ossining Hospital, where he died March 10, aged 53, of chronic cirrhosis of the liver.

Louis Lattman, Philadelphia; Temple University School of Medicine, Philadelphia, 1926; member of the Medical Society of the State Pennsylvania; died in a hospital at Miami, Fla., March 10, aged 45.

Charles Asbury Le Cates ✠ Tannersville, Pa.; Jefferson Medical College of Philadelphia, 1896; physician for the Monroe County Home, Kellersville; at one time on the staff of the Medico-Chirurgical Hospital, Philadelphia; died in the General Hospital of Monroe County, East Stroudsburg, March 8, aged 74.

Joseph Edward Lemire, Worcester, Mass.; College of Physicians and Surgeons, Boston, 1911; attending physician at the Worcester County jail; on the staff of St. Vincent Hospital; died March 15, aged 62, of cardiorenal disease.

Wilfred Arthur Major ✠ Chicago; Bennett Medical College, Chicago, 1914; on the staff of the Roseland Community Hospital, where he died March 13, aged 56, of pulmonary embolism.

William Murray Malone ✠ Los Altos, Calif.; Cooper Medical College, San Francisco, 1912; died in San Francisco February 17, aged 62.

George Emmons Marchand, Washington, D. C.; Kentucky School of Medicine, Louisville, 1891; served in the U. S. Navy during the Spanish-American War and World War I; retired from the government service in 1933; died in the Veterans Administration Facility March 7, aged 77, of hypertensive and arteriosclerotic heart disease.

Maxwell Comrie Montgomery, Rome, N. Y.; Syracuse University College of Medicine, 1905; member of the Medical Society of the State of New York; served during World War I; for many years on the staff of the Rome State School, where he had been assistant director; died February 27, aged 63, of multiple coronary infarction.

John Prather ✠ Seale, Ala.; University of Alabama School of Medicine, 1909; secretary of the Russell County Medical Society; served during World War I and later as a lieutenant colonel in the reserve corps of the U. S. Army; at one time on the staff of the Massillon State Hospital, Massillon, Ohio; died in the City Hospital, Columbus, Ga., February 13, aged 58.

Harley Arthur Sears ✠ Coldwater, Mich.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1921; specialist certified by the American Board of Psychiatry and Neurology, Inc.; medical superintendent of the Coldwater State Home and Training School; formerly assistant medical superintendent of the Kalamazoo State Hospital, Kalamazoo, where he had been a member of the staff for many years; died March 4, aged 46.

Ernest Eraine Shivers, Lexington, Texas; University of the South Medical Department, Sewanee, Tenn., 1901; member of the State Medical Association of Texas; formerly a druggist; died March 5, aged 62.

Francke Kefaver Slaton, Ardmore, Okla.; Kentucky University Medical Department, Louisville, 1906; died March 16, aged 60.

Shirley Robinson Snow, Rochester, N. Y.; College of Physicians and Surgeons, New York, 1889; member of the Medical Society of the State of New York; honorary surgeon on the staff of the Genesee Hospital; died in East Rochester March 8, aged 80, of cerebral accident.

Guy Fleming Spearman, Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1910; member of the Medical Association of Georgia; on the staffs of the Crawford W. Long Memorial Hospital, Georgia Baptist Hospital and St. Joseph Infirmary; died March 8, aged 63, of pneumonia.

Oliver Thoroman Sproull ✠ West Union, Ohio; College of Physicians and Surgeons, Baltimore, 1886; a charter member of the Adams County Medical Society, of which he was secretary from 1900 to 1943; a captain in the medical corps of the U. S. Army during World War I and later a captain in the medical reserve corps; for many years president of the board of education; president of the Adams County Building and Loan Association; died March 8, aged 81, of chronic myocarditis and bronchopneumonia.

James Martin Staughton, Covington, Ky.; Eclectic Medical Institute, Cincinnati, 1903; served as a first lieutenant in the medical corps of the U. S. Army during World War I; died March 4, aged 71, of heart disease.

Chauncey M. Stokes, Havana, Ill.; American Medical College, St. Louis, 1912; member of the Illinois State Medical Society; died March 1, aged 63, of angina pectoris.

Chester James Sturges, Minneapolis; State University of Iowa College of Medicine, Iowa City, 1922; private in Students' Army Training Corps at Iowa State University during World War I; captain, medical corps, Army of the United States, not on active duty; formerly on the staff of the Veterans Administration Facility, Bath, N. Y.; medical contact officer at the Veterans Administration Facility, where he died February 23, aged 47, of carcinoma of the liver and pancreas.

Frank August Tabor, Terre Haute, Ind.; Medical College of Indiana, Indianapolis, 1898; member of the Indiana State Medical Association; served during World War I; held important positions in the Veterans of Foreign Wars; on the staff of Union Hospital; died in the Veterans Administration Facility, Indianapolis, March 8, aged 71, of hemiplegia.

John Albert Thompson, Brookville, Ind.; Miami Medical College, Cincinnati, 1884; member of the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; professor emeritus of laryngology at the University of Cincinnati College of Medicine; for many years member on the staff of the Christ Hospital, Cincinnati, where he died March 1, aged 85, of coronary disease.

Adam Weaver ✠ Cumberland, Iowa; St. Louis College of Physicians and Surgeons, 1892; died February 26, aged 77, of myocardial failure.

William Jugartha West, Conway, Ark.; University of Louisville (Ky.) Medical Department, 1894; died March 16, aged 80.

Della Patterson Wetherby ✠ Wilkes-Barre, Pa.; Kansas Medical College, Topeka, 1896; formerly on the staff of the Mercy Hospital; died February 4, aged 78.

Gratian Philip Whitwham, Toledo, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; served during World War I; died in the Veterans Administration Facility, Chillicothe, March 4, aged 63, of heart disease.

Louis Jacob Wolf, Portland, Ore.; Cooper Medical College, San Francisco, 1903; member of the Oregon State Medical Society; assistant health officer; medical director of the City Isolation Hospital; died March 22, aged 67, of coronary thrombosis.

Arthur C. Wood ✠ Adrian, Mich.; Detroit College of Medicine, 1894; on the staff of the Emma L. Bixby Hospital; died March 16, aged 71, of angina pectoris.

Leroy Hammond Woodruff, Tuscaloosa, Ala.; University of Alabama School of Medicine, 1913; member of the Medical Association of the State of Alabama; served overseas during World War I; assistant superintendent of the Partlow State School; died in the Cleveland Clinic Hospital, Cleveland, February 14, aged 56, of pulmonary embolism following a laparotomy.

Henry Rush Zeller, Akron, Ohio; Ohio Medical University, Columbus, 1898; died February 5, aged 75, of carcinoma.

DIED WHILE IN MILITARY SERVICE

Thomas Austin Barry, Boston; Tufts College Medical School, Boston, 1936; member of the Massachusetts Medical Society; diplomate of the National Board of Medical Examiners; served on the resident staffs of the Morrisania City, Harlem, and Doctors hospitals in New York and the Boston Lying-in Hospital; formerly pathologist on the staff of Margaret Hague Maternity Hospital, Jersey City; began active duty as a lieutenant (jg) in the medical corps, U. S. Naval Reserve, in June 1942; later promoted to lieutenant; died Aug. 4, 1943, aged 34, of malignant tertian malaria.

James Allen Hemphill, Riverton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1937; served an internship at the Jersey City Hospital, Jersey City, and a residency at the Burlington County Hospital, Mount Holly, N. J.; began active duty as a first lieutenant in the medical corps of the Army of the United States on July 21, 1942; later promoted to captain; died in the North American theater April 10, aged 32, of a fractured skull.

Roderick Frederick MacDougal, Cedar Rapids, Iowa; Yale University School of Medicine, New Haven, Conn., 1935; member of the Iowa State Medical Society and the Central Association of Obstetricians and Gynecologists; diplomate of the National Board of Medical Examiners; served an internship and a residency in obstetrics and gynecology at the Strong Memorial and Rochester Municipal hospitals, Rochester, N. Y.; served a residency in obstetrics and gynecology at the University Hospitals, Iowa City; began active duty as a captain in the medical corps of the Army of the United States on Sept. 26, 1942; died suddenly in the European area February 24, aged 34.

Isham Sellers Moore Jr., Ozona, Texas; University of Arkansas School of Medicine, Little Rock, 1933; member of the State Medical Association of Texas; commissioned a first lieutenant in the medical reserve corps of the U. S. Army in 1941; later promoted to captain and major; died in the European area Oct. 21, 1943, aged 35.

Albert Daniel Neubert, Redlands, Calif.; University of Wisconsin Medical School, Madison, 1928; commissioned a captain in the medical corps, Army of the United States, on Sept. 11, 1942 and later promoted to major; died in the European area Oct. 29, 1943, aged 39, of acute cerebrospinal meningitis.

Correspondence

PRIORITY IN THE DISCOVERY OF FEVER THERAPY IN PSYCHOSIS

To the Editor:—In an editorial in THE JOURNAL, April 8, it is stated that priority for the use of malaria and relapsing fever in the treatment of dementia paralytica, according to Neymann (*Arch. Dermat. & Syph.* **48**:52 [July] 1943), should belong to Rosenblium.

Enthusiasm over the beneficial effect of fever in psychoses was common among psychiatrists of the middle of the last century. Several papers on this subject, some of which were quoted by Neymann and Zakon, had appeared a decade before the communication of A. S. Rosenblium was published in 1877. It is true that Rosenblium inoculated a group of mental patients with relapsing fever, but he did not continue this mode of treatment and there was no fever therapy, as we know it today, until Wagner-Jauregg in 1919 published the results of the studies on the first patients with dementia paralytica, who had been treated two years previously with inoculation malaria.

The merit of Wagner-Jauregg was that he soon realized that the beneficial effect of fever was restricted to cases of dementia paralytica. For over twenty years he then focused all his efforts on this type of mental illness, using tuberculin, typhoid vaccines and even streptococci of erysipelas to produce fever.

Wagner-Jauregg was well aware of the work of Rosenblium. I have in my possession a manuscript by Wagner-Jauregg entitled "The History of Malaria Treatment of General Paralysis" which was written by him for a monograph dealing with the malaria therapy of neurosyphilis. For the benefit of the readers of THE JOURNAL, the paragraph follows which gives Wagner-Jauregg's version in this matter: "In the literature Rosenblium is usually credited with being the first who inoculated general paralytics for therapeutic purposes using febris recurrens and not malaria. The facts, however, are that Rosenblium has never inoculated his patients with the idea of treating their mental illness. What he did was to make available his mental patients—among whom were no general paralytics—to the bacteriologist Motschuttkowski, who in Odessa in the year of 1876 studied the transmissibility of febris recurrens to human beings. Subsequently a few of these patients recovered from their psychoses, and Rosenblium reported this later under an assumed name (Oks, B.: *Arch. f. Psychiat.* **10**:249, 1880). Rosenblium never continued these experiments."

WALTER L. BRUETSCH, M.D., Indianapolis.

To the Editor:—The editorial on "Priority on the Discovery of Fever Therapy in Psychosis" (THE JOURNAL, April 8) discusses an interesting historical subject and prompts me to present two references which were first called to my attention by the late Dr. Paul Eaton.

Thomas Watson (Lectures on the Principles and Practice of Physic, Philadelphia, 1858) devotes a lengthy paragraph on page 488 to a discussion of previous notions of the salutiferous effects of an attack of ague, in which he calls attention to the 57th Aphorism of the 4th section of Hippocrates, "Fever supervening in a patient suffering from convulsions or tetanus, removes the disease." He also mentions a specific contemporaneous instance of the deliberate exposure of a patient to malaria in an effort to treat epilepsy.

The topic was previously discussed by F. G. Boisseau (Physiological Pyretology; or a Treatise on Fevers: etc, 1st American from the 4th French edition, translated by J. R. Knox, Philadelphia, 1832), who begins his section on the Treatment of Intermittent Fevers, and Especially of Benign Intermittent Fever, on page 402, with the following paragraphs:

> The first question under the head of treatment of these fevers is whether it is proper to attempt their cure. . . . Boerhaave was pleased to say that intermittent fever disposed to longevity. The fact that in a very limited number of cases, melancholy, mania, gout, epilepsy and palsy were observed to cease after its appearance, has given rise to the belief that this fever might sometimes be beneficial in its effects.
>
> If it be true that the intermittent fever is so beneficial to maniacs, epileptics, the gouty and paralytic, I know not why they should not be sent to the Pontine Marshes or to Batavia, instead of prescribing the pure air of the Pyrenees or of the Gold Coast [evidently Côte d'Or]. Let those, at least, who are free from these diseases get rid of the intermittent fever as soon as possible; and let it suffice to respect it in maniacs, epileptics, and paralytics, and even the gouty, if they prefer the fever to the gout.

MARK F. BOYD, Tallahassee, Fla.

To the Editor:—I have read with great interest the editorial on "Priority in the Discovery of Fever Therapy in Psychosis," April 8. I feel, however, that it contains one statement which should be corrected in the interest of historical accuracy. The editorial closes with the sentence "Possibly Wagner-Jauregg was not aware of the work of Dr. Rosenblium because of its publication in an obscure paper in a language little read outside the country of its origin." Wagner-Jauregg in his paper "Ueber die Einwirkung fieberhafter Erkrankungen auf Psychosen" (*Jahrb. f. Psychiat.* **7**:1887) mentions Rosenblium's work: "Oks, who reports the experience of Rosenblium, says in a footnote that of the 22 cases or recurrent fever reported by Rosenblium 12 were produced by inoculation. . . . This may be the first successful trial of artificially induced infectious diseases for therapeutic purposes in psychiatry." In the same paper Wagner-Jauregg mentions the experiments of his teacher Leidesdorff, published in the *Anzeiger der K. K. Gesellschaft der Aerzte in Wien*, 1875, who used fever produced by blood transfusion in the treatment of psychoses. Wagner-Jauregg mentioned Rosenblium's work again in a lecture on "Psychiatrische Heilbestrebungen," read before the Gesellschaft der Aerzte in Wien on Feb. 22, 1895 and published in the *Wiener klinische Wochenschrift* in 1895: "The first to produce an infectious disease in psychoses was Rosenblium in Odessa."

These quotations show that Wagner-Jauregg not only knew of Rosenblium's work but gave him full credit for his priority.

WALTER FLEISCHMANN, M.D., Baltimore.

FURUNCULOSIS

To the Editor:—In THE JOURNAL, April 22, there is an article by Dr. Philip B. Price entitled "Cause and Treatment of Furunculosis." Dr. Price stresses the resistance of resident skin bacteria to the usual bactericides. Based on the conception that furunculosis and the accompanying regional contamination are local phenomena, he advocates the use of a solution of ethyl alcohol exactly 70 per cent by weight by gentle gauze friction over the involved area for a period of twenty minutes. Excellent and rapid results were noted.

After the usual etiologic factors in furunculosis have been excluded, two contributory causes are frequently overlooked. The first is a transient hyperglycemia and the second a lowered resistance to Staphylococcus aureus, the common infecting agent in furunculosis.

In all cases of stubborn and recurrent furunculosis a diminished carbohydrate intake is indicated. I wish especially to stress the quick, dramatic and excellent end results which can be obtained by the subcutaneous use of staphylococcus toxin or toxoid to increase the resistance of a patient to furunculosis. Dr. Franklin A. Stevens and I studied thirty-one strains of

hemolytic Staphylococcus aureus and we found that the toxin production in all were apparently identical (*Proc. Soc. Exper. Biol. & Med.* **24**:592 [March] 1927). Toxin was prepared at the Presbyterian Hospital, New York, and it was used for therapeutic purposes. As is well known, Staphylococcus aureus has an endotoxin and an exotoxin. The refined exotoxin is injected into the human host in graduated doses. The response is increased circulating antitoxin. It is this antitoxin and possibly some substance produced by the endotoxin which attenuate or destroy furuncles and help to prevent their recurrence.

My experience with the use of staphylococcus toxin or toxoid extends over a period of seventeen years. The clinical results have been extremely satisfactory where other methods have failed. It is my impression that the profession has not taken full advantage of this potent biologic agent. Toxoid is easily obtained in the open market.

LOUIS CARP, M.D., New York.

DIETARY DEFICIENCY AND POLIOMYELITIS

To the Editor:—Permit us to point out an error in your editorial comment on "Dietary Deficiency and Poliomyelitis" (THE JOURNAL, April 1, p. 986). In the paragraph dealing with the mouse studies of Claire Foster and her associates (*J. Exper. Med.* **79**:221 [Feb.] 1944) you refer to the thiamine content of the diets in milligrams—10 mg. and 100 mg. per hundred grams of diet—whereas the original paper specified 10 and 100 micrograms per hundred grams of food.

We should like also to emphasize the fact that thiamine deficiencies as severe as those employed in the various virus studies do not result in low phagocytic activity. The work in our laboratory (as reported in the *Journal of Immunology* **47**:493 [Dec.] 1943) quite consistently showed low phagocytic activity with moderate vitamin deficiency but a rise to normal levels again when the inadequacy became severe and the animal was near death. This type of severe deficiency is obtained within four weeks when weanling white rats are fed synthetic diets containing 0 to 20 micrograms of thiamine per hundred grams of food. It was at the 40 to 60 microgram level that we obtained greatest suppression of phagocytic function. Therefore it may be that properly planned studies might still show protection against virus infections to be as much influenced by moderate vitamin deficiency as seems to be the case with bacterial invasions.

CLARENCE A. MILLS, PH.D., M.D.
ESTHER COTTINGHAM, B.S., M.T.
University of Cincinnati, Cincinnati.

ACCURACY IN MEASURING TEMPERATURE

To the Editor:—I thought your editorial in the April 8 issue on clinical thermometry most timely. I have tried for more than forty years to combat that sloppy attitude toward the thermometer.

Now I wonder if you couldn't go a step further and call attention to what I regard as an equally culpable error; that of failing to take into consideration the normal diurnal variation of human temperature. I find nurses, even in first class hospitals, reporting a temperature of 98.6 F. taken at 6 or 8 a. m. as normal, while any one who has given the matter close attention knows that it is the equivalent of 99.8 F. for the late afternoon or early evening.

I have known this to lead to serious consequences, as the patient; assuming that his temperature was normal, went out and got a serious and, in 2 instances, a fatal relapse.

If this is a pedantic notion of mine, just pass it over.

O. M. GILBERT, M.D., Boulder, Colo.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, May 13, page 169.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written.* Various large cities, May 8. *Oral.* Chicago, June 17. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, June 8-10. Final date for filing application is May 20. *Written.* Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY. Chicago, June 5. Sec., Dr. Paul C. Bucy, 912 S. Wood St., Chicago.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY. *Oral. Part II.* Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: New York, June 2-5. Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written. Part I.* Chicago, New Orleans, New York and San Francisco, October. Final date for filing application is August 1. Sec., Dr. G. A. Caldwell, 3503 Prytania St., New Orleans.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New York City, June 1-4. Chicago, Oct. 4-7. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written.* Chicago, June 7-8. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Sept. 22. *Oral.* St. Louis, Nov. 8-9. Final date for filing application is Aug. 15. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Naturopathic Practice Acts: Practice of Naturopathy by Unlicensed Person.—A complaint was filed charging Marjorie Wheaton with practicing naturopathy in Connecticut without a license. She practiced naturopathy without a license according to the allegations of the first count of the complaint by administering therapeutic treatments to one Rome on a stated date and according to the second count by administering treatments to another individual. The jury returned a verdict of guilty as to the first count and not guilty on the second count. The defendant moved to set aside the verdict of guilty on the first count as contrary to law and inconsistent with the finding of not guilty on the second count. The motion was denied, and she appealed to the Supreme Court of Errors of Connecticut.

General Statutes, Connecticut, section 2775, said the appellate court, prohibits an unlicensed person from practicing or attempting to practice naturopathy. Section 99le, Cumulative Supplement, 1939, defines the practice of naturopathy as:

> the practice of the psychological, mechanical and material sciences of healing as follows: The psychological sciences, such as psycho-therapy; the mechanical sciences, such as mechano-therapy, articular manipulation, corrective and orthopedic gymnastics, neuro-therapy, physio-therapy, hydro-therapy, electro-therapy, thermo-therapy, photo-therapy, chromo-therapy, vibro-therapy, concussion and pneumato-therapy, and the material sciences, such as dietetics, and external applications; but shall not mean internal medication or the administering of any substance simulating medicine or the form of medicine, except dehydrated foods.

The expression in both statutes, continued the court, is "practice." Complaint of a single therapeutic treatment by the means specified, standing alone, would not properly charge a violation of the statute. In this case the jury could reasonably have

found from the evidence before it that affixed to the house in which the defendant allegedly had an office was a sign which read "Institute of Electro-Hydro-Therapeutic Treatments, Scientific Massage." In a window on the first floor of that house was a sign which read "Wheaton Health Institute, Pine Needle Baths, Bakes, Massage." A sign on the front door read "Walk In." Inside the door was a large room in which were a desk and telephone. Beyond was a dressing room and beyond this was a room with an examination table and with charts of the human body on the wall. Rome, the patient who it was alleged in the first count of the complaint had been treated by the defendant, went to the alleged office of the defendant on a stated date, feigning a limp. He asked the defendant if she treated people "the same as a chiropractor does," to which she answered "Yes, be seated." He did not complain of an ailment nor did the defendant ask him if he had one. On her instructions Rome stripped to the waist and lay down on an examination table. The defendant flexed his legs by bending the knees and ankles and then held the legs together and said "That's it." Rome asked her what she meant and she declared that one leg was two inches shorter than the other and that this condition could cause kidney, liver and bladder troubles. She then had him lie prone and applied a heat lamp to his back. Following this she applied an ice-cold towel to it, massaged it with alcohol and ran an electric tube up and down his spine. After collecting $3 from him she instructed him to return in three days and that if he suffered pain in the interim to take aspirin. Rome returned later as instructed but apparently at that time was not subjected to any further treatment. Rome apparently was in good health and was suffering from no ailments at the times he consulted the defendant. The main contention of the defendant on appeal was that these facts showed but a single treatment, that this was not for therapeutic purposes and that in any event it was not enough to warrant a verdict of practicing naturopathy, relying on *State* v. *Faatz*, 83 Conn. 300, 76 A. 295, in which the Supreme Court of Errors of Connecticut held that one cannot be said to be engaged in the practice of dentistry "until he embarks in it, until he holds himself out as a dentist, either by a series of continuous acts, covert or open, or by advertising himself in some way as a dentist." In this case, the court continued, the jury could have found that the house in which Rome called on the defendant was her home, that the signs on it were her signs and that they were designed to invite the public to enter for the purpose of receiving therapeutic treatments; and that the defendant in fact administered such treatments.

A claim of the defendant that the particular treatments she administered may be given to a person with no ailment and were not therapeutic in character because the patient was admittedly a healthy person the court did not regard as tenable, since the defendant held herself out to give therapeutic treatments and purported to administer them. The court likewise rejected a claim of the defendant that the state had failed to allege specifically that she held herself out as a naturopath so as to bring her acts within the definition of the practice of naturopathy set out in the statute. The allegation of practice in the first count, said the court, was broad enough to admit evidence of advertising. It was not necessary to allege it specifically, and there was in addition evidence of treatments.

At the conclusion of the evidence the jury asked the trial court whether "the administering of electricity, water, heat, vibration and articular manipulation by themselves constituted Naturopathy or is there a doubt?" The defendant claimed that the answer given to this question by the trial court to the jury was not responsive. The trial court, said the appellate court, "answered the question in substance by stating that to engage in naturopathy one must hold oneself out as a naturopath either by a series of acts or by advertising in some way as a naturopath and that the question for them was whether the accused held herself out to the public as a duly qualified naturopath embarked in the profession." The trial court then repeated the definition of the various therapies named in the statute in reference to the use of electricity, water, heat, vibration and manipulation. This instruction, said the appellate court, was responsive and correct and the allegation of practice was properly supported by evidence of advertising and the trial court was not in error in including this in its definition of the crime charged.

Accordingly the judgment of conviction was affirmed.—*State v. Wheaton, 36 A. (2d) 118 (Conn., 1944).*

Society Proceedings

COMING MEETINGS

American Medical Association, Chicago, June 12-16. Dr. Olin West, 535 N. Dearborn St., Chicago 10, Secretary.

American Association for the Surgery of Trauma, Chicago, June 9-10. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Stockbridge, Mass., June 8-10. Dr. Charles C. Higgins, 2020 E. 93d St., Cleveland, Secretary.

American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Figi, 102 Second Ave., S.W., Rochester, Minn., Secretary.

American Broncho-Esophagological Association, New York, June 6. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago, Secretary.

American College of Allergists, Chicago, June 10-11. Dr. Fred W. Wittich, 401 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American College of Chest Physicians, Chicago, June 10-12. Dr. Paul H. Holinger, 500 N. Dearborn St., Chicago, Secretary.

American College of Radiology, Chicago, June 14. Mr. Mac F. Cahal, 540 N. Michigan Ave., Chicago, Secretary.

American Diabetes Association, Chicago, June 11. Dr. Cecil Striker, 630 Vine St., Cincinnati 2, Secretary.

American Federation for Clinical Research, Chicago, June 12-13. Dr. Thomas M. Durant, 3401 N. Broad St., Philadelphia 40, Secretary.

American Gastro-Enterological Association, Chicago, June 12-13. Dr. J. Arnold Bargen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Gynecological Society, Hershey, Penna., June 19-21. Dr. Howard C. Taylor Jr., 842 Park Ave., New York 21, Secretary.

American Laryngological Association, New York, June 7-8. Dr. Arthur W. Proetz, 3720 Washington Blvd., St. Louis, 8, Secretary.

American Laryngological, Rhinological and Otological Society, New York, June 9-10. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Chicago, June 10-11. Dr. Carroll L. Birch, 2045 Sedgwick St., Chicago, Secretary.

American Ophthalmological Society, Hot Springs, Va., May 29-31. Dr. Walter S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Physicians' Art Association, Chicago, June 12-16. Dr. F. H. Redewill, 536 Flood Bldg., San Francisco, Secretary.

American Proctologic Society, Chicago, June 11-13. Dr. W. H. Daniel, 1930 Wilshire Blvd., Los Angeles 5, Secretary.

American Therapeutic Society, Chicago, June 10. Dr. Oscar B. Hunter, 1835 I St. N.W., Washington 6, D. C., Secretary.

American Urological Association, St. Louis, June 19-22. Dr. Thomas D. Moore, 899 Madison Ave., Memphis, 3, Tenn., Secretary.

Association for Research in Ophthalmology, Chicago, June 13. Dr. B. F. Payne, School of Aviation Medicine, Randolph Field, Texas, Secretary.

Association for the Study of Internal Secretions, Chicago, June 12-13. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, Secretary.

Maine Medical Association, Rockland, June 25-27. Dr. Frederick R. Carter, 142 High Street, Portland 3, Secretary.

Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.

Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.

Society for Investigative Dermatology, Chicago, June 13. Dr. S. W. Becker, 55 E. Washington St., Chicago, Secretary.

South Dakota State Medical Association, Huron, May 21-23. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.

Wyoming State Medical Society, Casper, May 28. Dr. M. C. Keith, Capitol Building, Cheyenne, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

207:141-280 (Feb.) 1944

Osteosclerosis, Myelofibrosis and Leukemia. J. Churg and M. Wachstein. —p. 141.
Diagnostic Physicochemical Blood Tests in Sickle Cell Anemia. T. Winsor and G. E. Burch.—p. 152.
Hand-Schüller-Christian's Syndrome and "Eosinophilic or Solitary Granuloma of Bone." O. Versiani, J. M. Figueiró and M. A. Junqueira. —p. 161.
*Sulfonamide Inhibiting Action of Procaine. O. L. Peterson and M. Finland, with technical assistance of Mildred W. Barnes and Clare Wilcox.—p. 166.
*Toxicity of Sulfadiazine: Observations on 1,357 Cases. N. Plummer and C. Wheeler.—p. 175.
Gargoylism: Review of Literature with Report of 2 Cases. L. A. Lurie and S. Levy.—p. 184.
Surgical Removal of Adrenal Adenoma with Relief of Cushing Syndrome. S. F. Wilhelm and S. Gross.—p. 196.
Heart Disease in Selective Service Examinees: Study of 20,000 Examinees in Pacific Northwest. M. Wilburne and E. M. Ceccolini. —p. 204.
Clinical and Biochemical Study of Cow's Milk and Honey as an Essentially Exclusive Diet for Adult Humans. M. H. Haydak, A. E. Vivino, J. J. Boehrer, O. Bjorndahl and L. S. Palmer.—p. 209.
Development of Pulmonary Tuberculosis in Congenital Heart Disease. O. Auerbach and Marguerite G. Stemmerman.—p. 219.
Case of Histoplasmosis in Infant, with Autopsy. H. G. Schlumberger and A. C. Service.—p. 230.
Relation of Vitamin B to Toxicity of Promin as Tested by Self-Selection Method. G. M. Higgins.—p. 239.
Studies of B Vitamins in Human Subject: VII. Blood Pyruvate and Lactate-Pyruvate Ratio Following Ingestion of Glucose in Experimental Deficiency. D. Klein and K. O'Shea Elsom.—p. 247.

Sulfonamide Inhibiting Action of Procaine.—Peterson and Finland point out that the methods for determining sulfanilamide depend on diazotization and the coupling of the resulting diazo compound to produce an azo dye which can be easily estimated by colorimetric comparison. The reaction depends on the presence of an amino group substituted in the benzene ring and can therefore be used for the estimation of any derivative of sulfanilamide or for any related aromatic compound in which the amino group is free or can be freed by hydrolysis. Recognition of this fact has served to explain inconsistencies in the determination of sulfonamide drugs in body fluids. Procaine, which is the local anesthetic most commonly employed in obtaining such body fluids, is β-diethylaminoethyl-p-aminobenzoate and thus has a free aryl amine which may enter into this reaction. Procaine hydrochloride employed in local anesthesia may inhibit the action of sulfonamides in human blood. The authors present case reports illustrating the local sulfonamide inhibiting action of procaine. They find that procaine hydrochloride in amounts ordinarily employed for local anesthesia may be absorbed into the circulation in sufficient concentration to exert a definite inhibiting effect on the sulfonamides that may be present in the blood. Infection introduced into an area which has been infiltrated with procaine may become established locally in spite of the continuous presence in the body of bacteriostatic concentrations of sulfonamide drugs. It is desirable to use local anesthetic drugs other than paraaminobenzoic acid derivatives for infiltration when performing exploratory punctures of potentially infected areas. Procaine, or similar anesthetics of the paraaminobenzoic acid series, should also be avoided in extensive operative procedures on patients having severe infections in which rapid and effective action of sulfonamide drugs is essential.

Toxicity of Sulfadiazine.—Plummer and Wheeler analyze the toxic reactions that occurred in 1,357 hospital patients treated with sulfadiazine orally or with sodium sulfadiazine intravenously alone or in combination with sulfadiazine orally. There was 1 fatality, that of a patient with thrombocytopenic purpura, which was attributed to sulfadiazine. Eight per cent of 705 patients who received 6 Gm. of sulfadiazine daily for at least two days and not more than fourteen days showed evidences of toxicity. The renal reaction was the most frequent single toxic manifestation. With intravenous sodium sulfadiazine the incidence of renal reactions was almost doubled, and thereby the total incidence of reactions was raised. The effect of previous use of therapy with sulfonamide compounds on toxicity was observed in 87 patients, and in them there was a slightly increased incidence of reactions, attributable to a slight increase in drug rash, drug fever and leukopenia. The renal complications comprised more than half of the toxic reactions in the entire series. The total incidence of toxic reactions from sulfadiazine can be reduced to approximately 4 per cent by proper fluid intake together with appropriate alkali therapy. This study indicates a decided superiority of sulfadiazine over the other sulfonamide compounds on the basis of a low degree of clinical toxicity.

American J. Obstetrics and Gynecology, St. Louis

47:149-296 (Feb.) 1944

*Development of Early Human Ovum, with Special Reference to Trophoblast of Previllous Stage: Description of 7 Normal and 5 Pathologic Human Ova. A. T. Hertig and J. Rock.—p. 149.
Blood Vessels of Myomatous Uterus. R. L. Faulkner.—p. 185.
Fallacies in Soft Tissue Placentography. C. Moir.—p. 198.
*Surgical Problems Arising During Pregnancy. C. G. Child III and R. G. Douglas.—p. 213.
Carcinoma of Cervix Coincident with Pregnancy. C. R. Maino and R. D. Mussey.—p. 229.
Pelvic Inflammatory Disease of Specific Origin: Comparative Study of Two Series of Cases from Charity Hospital of Louisiana at New Orleans, with Special Reference to Recent Therapeutic Improvements and Their Effect on Mortality. H. E. Miller.—p. 245.
Iodine Vapor Technic versus Carbolfuchsin Stain for Vaginal Smears. R. S. Siddal.—p. 260.
Experience with Six Hour Rat Test for Pregnancy. S. Kaminester. —p. 265.
Volvulus of Cecum as Postpartum Complication. D. E. Sheldon.—p. 268.
Cure by Penicillin Following Repeatedly Unsuccessful Sulfonamide Therapy in Pregnant Woman with Gonorrhea. H. Strauss.—p. 271.
Vulvar Edema Complicating Delivery. N. Block.—p. 273.
Meigs' Syndrome. E. Kelemen.—p. 275.
Chiari's Syndrome. J. C. Potter.—p. 276.

Development of Early Human Ovum.—Hertig and Rock describe the early morphologic development of the normal human trophoblast and compare it with corresponding phases in the development of abnormal ova. The material used consisted of twelve fertilized ova, seven normal and five abnormal, discovered in surgically removed uteri. The series of five previllous and two villous normal human ova, ranging from 7.5 to 16.5 days in developmental age, shows that the human blastocyst implants on the posterior wall probably during the late sixth or the early seventh day of its development on endometrium that may range from the eighteenth to the twenty-third day of its development. There are no precise data on the time of implantation, since the youngest specimen, and therefore the most critical one with respect to this process, is already implanted. The figures given (late sixth or early seventh day) are deduced on the basis of this youngest specimen. Even younger ova must be secured in order to determine the actual time of implantation. Trophoblast proliferates at the site of implantation which, at first, consists of solid cytotrophoblast and syncytiotrophoblast. The latter becomes vacuolated on the eighth day, to develop lacunas for the reception of maternal blood on about the eleventh day. The chorionic villi begin to form as cytotrophoblastic masses on the twelfth to thirteenth day and grow peripherally along the syncytiotrophoblastic framework, ultimately coalescing peripherally to displace the syncytiotrophoblast, except the portion lining the intervillous space. Remnants of the desquamated syncytiotrophoblast are encountered in the placental site as giant cells. A series of five abnormal previllous ova, the developmental ages of which range from approximately eleven to fourteen days but which are difficult to interpret accurately because of their abnormality, shows a variety of conditions, ranging from shallow implantation of an otherwise normal ovum through extreme hypoplasia of the trophoblast to complete absence of the embryonic mass. The pathologic ova were all found on the anterior wall of the uterus.

Surgical Problems During Pregnancy.—Child and Douglas report that among 40,000 pregnant women there were 120, or 0.3 per cent, who presented surgical or gynecologic problems during the course of their gestation. Pregnant women tolerate even major surgical procedures fully as well as the nonpregnant. When the surgical disease, however, becomes complicated by peritonitis, the outlook is unfavorable and the maternal and fetal mortality high. Ovarian tumors complicating pregnancy may be removed with relative impunity provided operation can be postponed until after the first trimester. Myomectomy should not be performed during pregnancy except on urgent indications. An exploratory celiotomy for suspected ectopic pregnancy may be performed with relatively little danger of interrupting a normal intrauterine pregnancy should the preoperative diagnosis fail to be substantiated.

American Journal of Public Health, New York

34:101-214 (Feb.) 1944

Health Is Social Security. H. Folks.—p. 101.
Present Status of Health Insurance in United States. N. Sinai.—p. 107.
From Social Security to Public Health in Chile. H. Romero.—p. 112.
Proposed Canadian National Health Bill. J. J. Heagerty.—p. 117.
Evolving Pattern of Tomorrow's Health: Future of Public Health in Western Hemisphere. F. Hurtado.—p. 123.
Nationwide Victory Corps—Physical Fitness Dental Program. J. A. Salzmann and L. R. Kramer.—p. 127.
Postwar Implications of Fluorine and Dental Health: Epidemiological Aspects. H. T. Dean.—p. 133.
Postwar Implications of Fluorine and Dental Health: Problem as It Relates to Water Works Engineer. R. J. Faust.—p. 144.
Meningococcal Carrier Studies. J. J. Phair, E. B. Schoenbach and Charlotte M. Root.—p. 148.
Meeting the Public Health Engineering Problems of Army Overseas. W. A. Hardenbergh.—p. 155.
Present Status of Gonorrhea Control. N. A. Nelson.—p. 159.
Plasma Reserves for Civilian Defense, Their Distribution, Control, Preparation and Clinical Use: with Special Reference to Treatment of Infectious Diseases. J. B. Alsever.—p. 165.
Problems in Population Estimation. E. Sibley.—p. 174.

Archives of Dermatology and Syphilology, Chicago

49:91-156 (Feb.) 1944

Dermatology in an Army Station Hospital. H. W. Woolhandler.—p. 91.
*Blood Vitamin A and Cutaneous Diseases. T. Cornbleet, H. Popper and F. Steigmann.—p. 103.
Ringworm of Scalp: VI. Successful Use of Roentgen Rays to Epilate Local Areas of Infection. G. M. Lewis and Mary E. Hopper.—p. 107.
Primary Syphilis Treated by Twenty-Six Week Course of Mapharsen and Bismuth: Acute Basilar Meningitis with Neuroretinitis Developing During Treatment. G. A. DeOreo.—p. 109.
Association of Lupus Erythematosus and Thyrotoxicosis in Brother and Sister. E. P. Zeisler and S. M. Bluefarb.—p. 111.
Pemphigus Conjunctivae with Scarring of Skin: Report of 3 Additional Cases. W. F. Lever.—p. 113.
Balanitis Xerotica Obliterans: Report of Case. W. Leifer.—p. 118.
Epidemiology of Tinea Capitis: I. Study of Tinea Capitis in Dispensary. T. R. Benedek and I. M. Felsher.—p. 120.
Cutaneous Autosensitization: Role of Staphylococci in Chronic Eczema of Hands. H. H. Hopkins and E. L. Burky.—p. 124.
Chlorophyll Ointment in Treatment of Dermatophytosis of Feet and Similar Lesions. G. I. Wallace, J. K. Day and H. E. Moorman.—p. 128.
*Clinical Effects of Paraaminobenzoic Acid in Vitiligo. L. G. Beinhauer.—p. 132.

Blood Vitamin A and Cutaneous Diseases.—Cornbleet and his collaborators investigated the vitamin A and carotenoid levels in the plasma of 55 patients with various dermatologic diseases. They found that except for a few patients there were no characteristic deviations from the levels of hospital controls. One patient with Devergie's disease (pityriasis rubra) had a rather low level of vitamin A in the blood but a normal level of carotenoids; 1 patient with Darier's disease (keratosis follicularis) had a normal blood level of vitamin A. Two patients with disseminated lupus erythematosus showed rather low levels of vitamin A in the blood, but it was felt that this reflected the general depression of bodily functions in this disorder.

Paraaminobenzoic Acid in Vitiligo.—It has been claimed that paraaminobenzoic acid restores pigmentation and also causes depigmentation. Beinhauer found that vitiligo remained unaffected in 41 patients treated with paraaminobenzoic acid. Repigmentation was not noted in 14 patients with achromotrichia given paraaminobenzoic acid. This treatment was only partially successful in 1 case of achromotrichia associated with vitiligo. Failure was recorded in the treatment of 11 patients with achromotrichia accompanying alopecia areata. The administration of paraaminobenzoic acid failed to cause depigmentation or to prevent lentigines in 6 cases.

Archives of Ophthalmology, Chicago

31:129-190 (Feb.) 1944

*New Aid in Removal of Foreign Bodies of Cornea: Topical Application of Silver Nitrate. D. F. Gillette.—p. 129.
Word of Caution in Use of Pentothal Sodium in Ophthalmic Surgery. H. F. Falls.—p. 134.
Congenital Opacities of Cornea. F. H. Theodore.—p. 138.
Juvenile Macular Exudative Choroiditis: Juvenile Disciform Degeneration of Macula (Junius). F. H. Adler and H. Scarlett.—p. 144.
Experimental Studies on Fatigue of Accommodation: I. Plan of Research and Observations on Recession of Near Point of Accommodation Following a Period of Interpolated Work on Ophthalmic Ergograph. C. Berens and S. B. Sells.—p. 148.
Ophthalmic Requirements of Military Services: Changes from Feb. 1, 1943 to Jan. 1, 1944. C. A. Bahn.—p. 160.
Penicillin in Treatment of Gonorrheal Conjunctivitis: Report of Case. W. P. Griffey.—p. 162.
Comparison of Ishihara and American Optical Company Series of Psudoisochromatic Plates. R. H. Harris.—p. 163.
Penicillin and Gramicidin as Ocular Chemotherapeutic Agents. W. W. Wong.—p. 165.

Removal of Foreign Bodies from Cornea: Topical Application of Silver Nitrate.—Gillette's method utilizes the chemicophysical reaction produced by topical application of a 1 to 3 per cent solution of silver nitrate. The solution is applied by a small thread of cotton spun on the sharpened end of a round wooden toothpick. The cotton is cut off clean with sterile scissors so as to remove any stray fibers that might spread the solution over too large an area of the cornea. The reaction is a faint gray swelling of the superficial epithelium which elevates the foreign body slightly above the level of the surrounding epithelium. This swelling appears to be caused by local softening and edema of the tissue. The injured eye is anesthetized and carefully inspected. The conjunctival sac is irrigated, and when necessary a drop of sterile 2 per cent solution of fluorescein sodium is used to map an abrasion of the cornea or to outline the foreign body. The 1 per cent solution of silver nitrate is then applied to the foreign body. The reaction which develops in one minute is sufficient. Removal of the foreign body is then attempted. The topical application of silver nitrate before removal of foreign bodies from the cornea is of value because (*a*) it facilitates removal of the foreign body, burn and stain from the corneal epithelium, (*b*) it causes a minimum amount of trauma and (*c*) it is economical, for it conserves time and function. The earlier the patient is treated the more successful is the method. The method is applicable to all foreign particles.

Archives of Pathology, Chicago

37:83-160 (Feb.) 1944

Mechanism of Isoimmunization by Rh Factor of Red Blood Cells: Standardization of Anti Rh Serums. P. Levine.—p. 83.
Genesis of Encephalopathy Due to Arsphenamine (Central Vasoparalysis Due to Arsphenamine). I. M. Scheinker.—p. 91.
*Eosinophilic Granuloma of Bone: Condition Affecting One, Several or Many Bones, But Apparently Limited to Skeleton and Representing Mildest Clinical Expression of Peculiar Inflammatory Histiocytosis also Underlying Letterer-Siwe Disease and Schüller-Christian Disease. H. L. Jaffe and L. Lichtenstein.—p. 99.
Nature and Occurrence of Cavum Septi Pellucidi. O. Swenson.—p. 119.
Renal Injury and Lymphatic Atrophy: Lymphopenia and Atrophy of Lymphatic Tissue Associated with Acute Renal Insufficiency in Dogs. R. L. Holman.—p. 124.
Genetic Analysis of Induction of Tumors by Methylcholanthrene: VII. Primary Carcinoma of Liver Following Subcutaneous Injection of Methylcholanthrene in Mice. L. C. Strong.—p. 131.
Fulminating Meningococcic Infection with Bilateral Massive Adrenal Hemorrhage (Waterhouse-Friderichsen Syndrome): with Special Reference to Pathology, Medicolegal Aspects and the Incidence in Adults. H. S. Martland.—p. 147.

Eosinophilic Granuloma of Bone.—According to Jaffe and Lichtenstein eosinophilic granuloma of bone, Letterer-Siwe disease and Schüller-Christian disease may be considered different clinicoanatomic expressions of the same basic disorder. This disorder apparently presents a peculiar inflammatory reaction to some as yet unknown agent of infection, and its individual lesions are characterized by the presence of large numbers of histiocytes. In eosinophilic granuloma of bone the lesions seem to develop only in the skeleton and often only in a single bone and are given a distinctive cytologic imprint by the abundance

of eosinophils intermingled with the histiocytes. The lesions do not tend to become scarified, collagenized and lipidized, heal readily after simple curettage without supplementary roentgen irradiation and may indeed heal by resolution without any therapeutic intervention whatever. In Letterer-Siwe disease the histiocytic lesions are widely distributed through the soft tissues and the skeleton, the marrow sometimes being extensively affected even when there are few actually destructive lesions in the bones. With the presence of widespread destructive lesions in the bones of the skull, Letterer-Siwe disease may come to present the complete Christian triad of calvarial defects, diabetes insipidus and exophthalmos. Though the lesions in the soft tissues in cases of Letterer-Siwe disease do not show infiltration by eosinophils, the destructive lesions of bones do show it, especially early in the evolution. The granulation tissue in such destructive skeletal lesions of Letterer-Siwe disease is indistinguishable from such tissue in corresponding lesions of eosinophilic granuloma of bone. In a case of Letterer-Siwe disease running a relatively protracted course one is likely to find that some of the lesions are becoming scarified, collagenized and lipidized, the case thus passing into Schüller-Christian disease. Schüller-Christian disease represents the disorder in its most chronic and its most miscellaneous form.

Archives of Surgery, Chicago

48:105-184 (Feb.) 1944

Nervous Regulation of Clotting Mechanism. G. de Takats.—p. 105.
*Significance of Supraclavicular Signal Node in Patients with Abdominal and Thoracic Cancer: A Study of 122 Cases. E. P. Viacava and G. T. Pack.—p. 109.
Apparatus for Measuring Rate of Enzymatic Digestion of Absorbable Surgical Sutures and Other Protein Fibers. K. S. Lion and I. W. Sizer.—p. 120.
Drepanocytosis (Sicklemia) and an Apparently Acute Surgical Condition of the Abdomen: Report of Their Occurrence in a White Youth, with Laparotomy. C. B. Canby, G. Carpenter and L. F. Ellmore.—p. 123.
Hemangioma of the Mediastinum: Report of a Case. W. E. Adams and R. G. Bloch.—p. 126.
Casein in the Local Treatment of Burns and Wounds. R. M. Curtis and J. H. Brewer.—p. 130.
*Pancreatic Calculi: Report of 7 Cases, in 2 of Which Cure Was Effected by Pancreaticolithotomy. J. Lionello, B. J. Ficarra and N. H. Ryan.—p. 137.
Simplified Surgical Approach to Hip. R. Sutherland, and M. J. Rowe Jr.—p. 144.
Review of Urologic Surgery: A. J. Scholl and others.—p. 146.
Progress in Orthopedic Surgery for 1942: A Review Prepared by an Editorial Board of the American Academy of Orthopaedic Surgeons.—p. 166.

Supraclavicular Signal Node in Abdominal and Thoracic Cancer.—Viacava and Pack investigated the incidence of lymph node metastases in the supraclavicular space in 4,365 patients with abdominal and thoracic tumors, who were treated during the last two decades in the New York Memorial Hospital. Only 122, or 2.8 per cent, had involvement of the signal nodes. The greater frequency of metastases to the left side (59.8 per cent) is explained by the relationship of the thoracic duct to the supraclavicular nodes on this side. Metastatic involvement of lymph nodes in the right supraclavicular space (25.4 per cent) is less frequent and occurs mainly in patients with tumors of the thoracic cavity. Bilateral invasion of the supraclavicular nodes (14.8 per cent) is also more commonly associated with thoracic than with abdominal cancer. In 81 patients the signal nodes were invaded only in the advanced stages of cancer, and in the majority at the same time generalized metastases appeared in other organs. In 41 patients the supraclavicular metastases constituted the first clinical sign of a malignant tumor and led to search for the primary cancer. Aspiration biopsy was a valuable aid in the solution of these diagnostic problems. Palliative treatment by irradiation improved the local or supraclavicular condition and at times controlled the primary cancer for a while without appreciably increasing the length of life.

Pancreatic Calculi.—Lionello and his associates observed 6 cases of pancreatic lithiasis in Kings County Hospital between January 1938 and April 1943 and 1 case in private practice. Most investigators believe that the condition is rare, but the authors think that it would be preferable to state that the condition is infrequently encountered, possibly because of the failure of the clinician to consider it in differential diagnosis. The total number of reported cases, including these in this paper, is 232. Stagnation of pancreatic juices, as a result of chronic inflammation with sclerosis, is the dominant causal factor of pancreatic calculi. Pancreatic stones are composed chiefly of calcium carbonate and tribasic calcium phosphate, but normal pancreatic juice does not contain calcium in these forms. An inflammatory process in the pancreas may be the cause of alteration of the chemical composition of pancreatic secretions. Pancreatic stones may be divided into true stones, found in the ducts, and false stones (calcification), found in the parenchyma. Pain is the most significant complaint. Associated diabetes or jaundice is seen rarely. The patient's history often suggests biliary or renal calculi. The diagnosis is established by roentgenologic studies of the abdomen. A simple flat roentgenogram of the abdomen will reveal the calculi. Surgical intervention is indicated when a diagnosis of pancreatic lithiasis is made. The safest approach to the pancreas is through the gastrocolic omentum. Where this approach has been utilized, there is reported an operative mortality of 7 per cent. Palliative treatment is of little avail. Unless the calculi are removed, the patient with symptoms must continue to complain of discomfort and look forward to the possibility of gradual destruction of the pancreas. The authors report the histories of 2 patients in whom pancreatic calculi were successfully removed and who at present are enjoying good health.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

74:1-122 (March) 1944

Treatment of Burns Due to Chemical Warfare Agents. S. S. Scherling, B. M. Overholt and K. H. Stahmer.—p. 52.
Sporotrichosis in Horses: Case Report. T. C. Jones and F. D. Maurer.—p. 63.
Treatment of Skin Infections in Assam-Burma Jungle. J. H. Grindlay.—p. 74.
Diphtheria Among German Prisoners of War. S. Fleck, J. W. Kellam and A. J. Klippen.—p. 80.
Opportunities for Treatment of Neuropsychiatric Patients. W. C. Menninger.—p. 90.
*Cartilage Banks. L. L. Nunn.—p. 99.
Bedbug Control in Large Army Camp. W. W. Towne and E. J. Gerberg.—p. 101.
Cyst in Sinus Containing Supernumerary Molar: Report of Case. J. E. Pleasants.—p. 107.
Calories Expended in Military Activities. H. Pollack, C. E. French and G. H. Berryman.—p. 110.

Cartilage Banks.—According to Nunn, human cartilage is the most satisfactory medium for the treatment of bony defects of the face, especially of the nose, malar region and supraorbital regions. Homocartilage is the ideal medium for restoration of certain defects in facial contour. Cartilage best suited for implantation is to be found in young healthy persons who have met accidental death. As soon as possible after death the anterior chest wall is prepared as for a surgical procedure, and it is opened in the midline by the operator under aseptic precautions. All costal cartilages on both sides are removed with rib shears and knife. Segments of cartilage are placed in sterile isotonic solution of sodium chloride. They can be prepared either immediately or placed in the refrigerator to be cleaned and prepared within the next forty-eight hours. All perichondrium must be stripped and scraped off. Segments are placed in a solution consisting of one part aqueous solution of merthiolate and four parts of isotonic solution of sodium chloride. A pint jar is an ideal container. Just before the cartilage is covered with the solution, a culture is made. The jar is placed in the refrigerator and the solution is changed every three weeks. Cartilage thus preserved is inert and can be implanted with impunity, regardless of age, color, sex or blood type of the patient.

California and Western Medicine, San Francisco

60:45-88 (Feb.) 1944

Soft Tissue Complications of Fractures of Leg. A. B. Sirbu, M. J. Murphy and A. S. White.—p. 53.
Appendical Disease. W. C. Curphey.—p. 56.
Rh Antigen: Its Clinical Importance. C. Weiss.—p. 59.
Exophthalmos in Diseases of Thyroid. M. H. Soley.—p. 64.
*Acute Calcified Subacromial or Subdeltoid Bursitis. F. R. Guido.—p. 69.

Calcified Subdeltoid Bursitis.—Guido observed 11 cases of calcified subdeltoid bursitis. Bosworth discovered the condition in 165 of 6,061 persons examined, an incidence of 2.7 per cent. The possibility of calcified subacromial bursitis must

always be considered when dealing with an acute painful shoulder. Diagnosis can be made by fluoroscopy and x-ray examination. Repeated trivial trauma is probably the most important etiologic factor. Focal infection probably plays no part in the production of the calcium deposit. The condition has its inception in the tendons of the short rotators of the humerus, especially the supraspinatus, and the subacromial bursa is secondarily involved. The calcium deposit may be present for a considerable length of time without the production of acute symptoms. The removal of the calcium deposit by surgical incision is the treatment of choice in the majority of cases. This is especially true for the acute fulminating type. Relief is immediate, complete and permanent. Other methods of treatment have also proved successful.

Connecticut State Medical Journal, Hartford

8:69-138 (Feb.) 1944

*Problems of Postoperative Thrombophlebitis and Pulmonary Embolism. J. A. Evans.—p. 71.
Hospital and Medical Care. W. M. Allen.—p. 75.
Problem of Chronic Illness in Connecticut. K. F. Heiser.—p. 79.
Accuracy and Interpretation of Modern Blood Tests for Syphilis. E. K. Borman.—p. 82.
Advent of Microscope at Yale College. L. L. Woodruff.—p. 93.

Postoperative Thrombophlebitis and Pulmonary Embolism.—Postoperative pulmonary embolism, according to Evans, is more apt to arise from silent unrecognized areas of phlebothrombosis than from clinically recognized thrombophlebitis. Prophylaxis is the most important key to the problem. Patients over 50 years of age with arteriosclerosis and obesity, when subjected to hysterectomy, cholecystectomy, Miles resection, resection of carcinoma of the large bowel, prostatectomy or herniotomy, are the most likely candidates for venous thrombosis and pulmonary embolism. A history of previous venous thrombosis or pulmonary embolism greatly increases the possibility of postoperative recurrence. The incidence of pulmonary embolism was compared in two hospitals, in which during one winter season bicycle exercises were most faithfully carried out by the nursing staff of hospital A, while in hospital B these orders had not been given. Hospital B, with 10 per cent less major operations, had almost three times more cases of pulmonary embolism. One of the most important prophylactic measures is exercise of the feet in bed. Hospital personnel are ordered to remind patients repeatedly to wiggle their toes and feet a thousand times a day. For the last two years the author subjected patients with a previous postoperative or postpartum history of venous thrombosis or pulmonary embolism to anticoagulation therapy with dicumarol beginning about three days after operation if there is no danger of hemorrhage. A warning benign pulmonary embolism in a patient over 50 years of age is an indication for venous section and ligation if the source of the embolism can be recognized. An accumulation of more statistics is necessary before anticoagulation therapy with heparin and dicumarol can be considered a safe preventive of pulmonary embolism, and venous section and ligation can be omitted. In a series of 57 cases of postoperative venous thrombosis treated by combined heparin and dicumarol, 1 subsequent pulmonary embolism and 1 fatal pulmonary embolism occurred. Paravertebral procaine sympathetic block is reserved for patients with thrombophlebitis. Sulfonamide drugs are a useful adjunct in the treatment of thrombophlebitis. Papaverine is used to relax arterial reflex spasm.

Journal of Nervous and Mental Disease, New York

99:115-226 (Feb.) 1944

Unusual Congenital Anomalies of Lumbosacral Spine (Spina Bifida), with Report of 3 Cases. J. M. Meredith.—p. 115.
Neurotic Components in Psychopathic Behavior. J. M. Caldwell.—p. 134.
Responses of Schizophrenic Patients to Induced Anoxia. W. Corwin and S. M. Horvath.—p. 149.
Eonism with Added Outstanding Psychopathic Features. D. M. Olkon and Irene Case Sherman.—p. 159.
Incidence of Bromism at Warren State Hospital. A. A. Kippen.—p. 168.
Reaction Around Cerebral Vascular Lesions and Its Bearing on Cerebral Localization. L. B. Alford.—p. 172.
Closeup of Psychosexual Gratification. W. Eliasberg.—p. 179.

Journal Pharmacology & Exper. Therap., Baltimore

80:119-204 (Feb.) 1944

Pharmacologic Study of 5-Allyl-5-Δ²-Cyclopentenyl Barbituric Acid (Cyclopal). M. J. Vander Brook and G. F. Cartland.—p. 119.
Influence of Temperature on Action of Digitoxin and Potassium on Striated Muscle. S. A. Guttman.—p. 126.
Tissue Aldehydes and Their Reaction with Amines. K. A. Oster and M. G. Mulinos.—p. 132.
Chronic and Delayed Toxic Effects of Certain Saturated and Unsaturated Halogenated Hydrocarbons in White Rats and White Mice. B. E. Abrue, S. H. Auerbach, J. M. Thuringer and S. A. Peoples.—p. 139.
Biochemical Aspects of Toxicity of Atabrine: I. Acute Effects of Massive Doses in Rat. J. V. Scudi, Viola C. Jelinek and S. Kuna.—p. 144.
*Id.: II. Influence of Diet on Effects Produced by Repeated Doses of Drug. J. V. Scudi and Margaret T. Hamlin.—p. 150.
Hypoprothrombinemia Induced by Administration of Indandione Derivatives. H. Kabat, E. F. Stohlman and M. I. Smith.—p. 160.
Contribution to Pharmacology of Nitrate Ester of Choline Perchlorate. C. J. Carr, F. K. Bell, W. E. Evans Jr. and John C. Krantz Jr.—p. 171.
Studies on Action of Morphine on Central Nervous System of Cat. A. Wikler.—p. 176.
Studies on Fate of Morphine Sulfuric Ether. F. W. Oberst and E. G. Gross.—p. 188.
Study of Digitoxin Binding Power of Serum and Other Soluble Tissue Proteins of Rabbit. G. Fawaz and A. Farah.—p. 193.
Effect of Propamidine and Certain Other Diamidines on Oxidation of Various Substrates by E. Coli. F. Bernheim.—p. 199.

Influence of Diet on Effects Produced by Atabrine.—Scudi and his associates found that rats maintained on a high protein-low fat diet appear to resist toxic effects on the liver of the daily administration of atabrine to a greater degree than rats maintained on low protein diets or a diet high in both protein and fat. Daily administration of large doses of atabrine (25 to 50 mg. per kilogram) to dogs produces inanition within three to six weeks. At lower dose levels (5 to 10 mg. per kilogram) this is not evident three to five months after initiation of drug administration.

New England Journal of Medicine, Boston

230:157-184 (Feb. 10) 1944

Procedures of Blood Bank at Massachusetts General Hospital. L. Soutter.—p. 157.
Diet in Pregnancy. C. L. Sullivan.—p. 167.
Rupture of Left Temporosphenoidal Brain Abscess into Ventricle: Report of Case, with Recovery. L. E. Wolfson.—p. 170.
Blood Banks and Blood Transfusion. J. F. Ross.—p. 171.

230:185-208 (Feb. 17) 1944

Electromyographic Studies of Muscle Dysfunction in Infectious Polyneuritis and Poliomyelitis. Mary A. B. Brazier, A. L. Watkins and R. S. Schwab.—p. 185.
Geriatrics: Medical Care of Elderly. R. I. Lee.—p. 190.
Purpura Annularis Telangiectodes: Report of Case. S. M. Gundersen and J. G. Bennett.—p. 193.
Blood Banks and Blood Transfusion. J. F. Ross.—p. 195.

New York State Journal of Medicine, New York

44:337-448 (Feb. 15) 1944

Emotional Factors in Alcoholism. E. B. Allen.—p. 373.
Postconcussion Syndrome: Prognosis and Evaluation of Organic Factors. P. G. Denker.—p. 379.
*Sixteen Years' Experience with Placenta Previa, Emphasizing Conservative Therapy. W. L. Ekas.—p. 385.
Early Stages of Chronic Glaucoma. H. S. Gradle.—p. 391.
*Clinical Studies of Sulfamethazine. W. McDermott, D. R. Gilligan, C. Wheeler and N. Plummer.—p. 394.
Clinical Studies of Circulation Time with Objective (Photoelectric Cell-Dye) Method. B. Jablons, J. Cohen and M. Y. Swirsky.—p. 398.
Management of Injuries of Common Bile Duct. H. E. Pearse.—p. 403.

Placenta Previa.—Ekas presents 86 cases of placenta previa which were observed in sixteen years among 14,386 obstetric cases. Conservative measures were employed in the treatment of 95.3 per cent. The hydrostatic or Vorhees' bag was used in 76.6 per cent. The maternal morbidity was 40 per cent and the mortality 2.3 per cent. The uncorrected fetal mortality was 55.8 per cent. Two factors, prematurity and asphyxia, keep the fetal mortality high. The author thinks that not enough importance is attached to the initial hemorrhage in the latter half of pregnancy. Transfusions of whole blood and/or plasma in amounts sufficient to replace blood loss will save many lives. Infection should be feared as much as hemorrhage in treating placenta previa. The treatment should consist of conservative measures in the large majority of cases, and cesarean section should be used in the small well selected group.

Clinical Studies of Sulfamethazine.—McDermott and his associates studied the pharmacology, toxicity and therapeutic effectiveness of sulfamethazine in 34 patients with various infections. They think that therapy with sulfamethazine is less satisfactory and reliable than is therapy with sulfadiazine together with appropriate adjuvant alkali therapy.

North Carolina Medical Journal, Winston-Salem

5:1-36 (Jan.) 1944

Amebiasis. P. W. Brown.—p. 1.
Carcinoma of Large Intestine. D. S. Daniel.—p. 4.
Intensive Treatment of Early Syphilis. W. L. Fleming.—p. 6.
Sterility. A. Grollman.—p. 13.
Nature of Tremors. A. A. Morris Jr.—p. 15.

5:37-80 (Feb.) 1944

Present Status of Vitamin Therapy in Deficiency States. J. M. Ruffin and D. Cayer.—p. 37.
Vitamin C Nutrition Under Camp Conditions. D. F. Milam and I. H. Manning Jr.—p. 41.
What the Practitioner Should Know About Spine Injuries. M. A. Pittman.—p. 43.
Spontaneous Pneumothorax: Diagnosis and Prognosis. E. McG. Hedgpeth, W. R. Berryhill, W. G. Morgan, R. E. Stone, F. G. Patterson and Ruby A. Smith.—p. 48.
Modern Treatment of Pinworm Infections. W. N. Sisk.—p. 52.

Public Health Reports, Washington, D. C.

59:137-188 (Feb. 4) 1944

Sanitation Manual for Public Ground Water Supplies.—p. 137.

59:189-220 (Feb. 11) 1944

National Inventory of Needs for Sanitation Facilities: II. Milk Pasteurization Facilities. J. Andrews and A. W. Fuchs.—p. 189.
Health of Student Nurses: Report of Study Conducted in School of Nursing. L. F. Fuld.—p. 205.

Surgery, Gynecology and Obstetrics, Chicago

78:113-224 (Feb.) 1944

Surgical Treatment of Peripheral Nerve Injuries. C. C. Coleman.—p. 113.
Treatment of Wounded in Combat Zone. D. L. Borden.—p. 125.
Cervical Lymph Node Metastasis as First Symptom of Cancer. H. Martin and H. M. Morfit.—p. 133.
Experimentally Increased Blood Supply to Head and Neck of Femur. W. G. Stuck and J. J. Hinchey.—p. 160.
Bacterial Flora of Fresh Accidental Wounds. W. A. Altemeier and E. W. Gibbs.—p. 164.
Simple, Useful Anterior Gastroenterostomy. F. H. Lahey.—p. 169.
Clinical and Bacteriologic Study of Phemerol as Skin Antiseptic. W. E. Brown, M. F. Gunderson, Pauline Schwartz and Violet M. Wilder.—p. 173.
*Protein Deficiency in Surgical Patients. K. A. Meyer and D. D. Kozoll.—p. 181.
Red Cell Transfusions in Treatment of Anemia: Further Observations. H. L. Alt, S. G. Taylor III, D. L. Custis and F. D. Bernard.—p. 191.
Carcinoma of Cervix: Wertheim Operation. J. V. Meigs.—p. 195.
"War Injuries" in Civil Practice. H. J. Warthen Jr.—p. 200.
*Uterine Contractions Associated with Prolonged Labors: Observations of Uterine Motility made with Lóránd Tocograph. D. P. Murphy.—p. 207.
Conservative Treatment of Acute Inversion of Uterus. H. Burwig.—p. 211.
Right Rectus Gridiron Incision in Congenital Hypertrophic Pyloric Stenosis. H. H. Davis.—p. 213.

Protein Deficiency in Surgical Patients.—Surgical disease as such and in addition operative procedures drain the protein depots of the body and may produce hypoproteinemia. In studies on 278 patients Meyer and Kozoll investigated (1) the incidence of hypoproteinemia in the various surgical diseases before and after operation, (2) its influence on the final outcome of the disease, (3) its relation to red cell volume and protein concentration and (4) the therapeutic results obtained by various protein sources. Hypoproteinemia was encountered most frequently in bleeding peptic ulcers, carcinomas of the gastrointestinal tract, bowel obstruction and intestinal fistulas. The hypoproteinemia in peptic ulcer patients was corrected by liberal amounts of blood, blood plasma and amino acids. Hypoproteinemia in carcinoma of the gastrointestinal tract, bowel obstruction and intestinal fistulas was aggravated by surgery but improved if intensive therapy was employed. Of 32 fatal cases, 18 showed a hypoproteinemia either before or after surgery. Plasma protein rise was related to the administered amount of whole blood, plasma or amino acids and combinations of these. Consistent improvement was seen when 2,000 cc. or more of blood alone or in combination with plasma or amino acid was given. Whole blood appears to improve plasma proteins more than does plasma, owing to the value of hemoglobin as a protein source. The combination of amino acids and whole blood as a means of treating hypoproteinemia warrants further use. The daily observation of the total protein, hematocrit and hemoglobin is suggested as an aid in deciding whether whole blood, plasma or dextrose and/or saline solution meets the patients' requirements best.

Uterine Contractions in Prolonged Labors.—If labor is prolonged, it must be determined whether the failure of the patient to deliver in a reasonable length of time is due to disproportion or to inadequate contractility of the myometrium. Disproportion can be diagnosed by physical examination or x-ray pelvimetry. The efficiency of uterine contractions is somewhat more difficult to evaluate, but recording the character of the contractions with a Lóránd tocograph is helpful. The uterine contractions of 105 women who were being delivered vaginally in the Hospital of the University of Pemsylvania were registered at one and a half to two hour intervals throughout their labors with a Lóránd tocograph. Murphy reproduces and analyzes the tocographic records of 3 patients who experienced prolonged labors. The uniformity in the character of the tracings of a given individual demonstrates the feasibility of recording the uterine contractions at frequent intervals throughout labor. The character of the contraction pattern is established early in labor and with minor modifications persists throughout labor. The contraction pattern of one individual differs significantly from that of another. A prolonged labor may be associated with either a normal or an abnormal uterine contraction pattern. The persistence of a normal contraction pattern throughout a prolonged labor suggests that any delay in delivery is due to disproportion rather than to inertia. The contraction pattern characteristic of primary uterine inertia is established early in the course of labor. The tocograph will not only record the existence of a primary inertia but also indicate its degree. Regular tocographic tracings will record the first appearance of secondary inertia. Systematic recording of the character of the uterine motility during labor by means of the Lóránd tocograph can aid the obstetrician in the conduct of the labor.

Texas State Journal of Medicine, Fort Worth

39:509-558 (Feb.) 1944

Keep the Doctor American. R. A. Miller.—p. 518.
Medical and Surgical Care of Hypertrophy and Cancer of Prostate. H. H. Young.—p. 521.
Trigeminal Neuralgia and Related Conditions. J. Greenwood Jr.—p. 526.
Nonspecific Granuloma of Colon. J. P. Barnes.—p. 529.
*Occupational Disease of Electric Welders. T. R. Jones and J. A. Lockhart.—p. 532.
Review of Coccidioidal Granuloma in Texas: Report of Case. P. Marcuse and L. Karotkin.—p. 534.
Feeding Problems in Infancy. J. P. Gibson.—p. 537.
Thymic Cyst of Neck: Report of Case. T. L. Hyde, E. D. Sellers and May Owen.—p. 539.

Occupational Disease of Electric Welders.—According to Jones and Lockhart, welding produces smoke composed of ozone, nitrogen oxides, silicon, asbestos and small particles of iron less than 0.5 microns in diameter. The composition of the smoke varies with the type of metal being welded. Ordinarily the welding rods are composed of approximately the same alloy as that being welded. Welding fumes may produce acute and chronic changes in the lungs. The acute changes produced by heavy concentrated exposure consist of pulmonary edema, which may be complicated by bronchial ulceration and pneumonia. After repeated exposure, chronic changes ensue, consisting of chronic bronchitis, pulmonary fibrosis, asthmatic wheezing and eventually pulmonary emphysema. Persons with arrested tuberculosis who attempt to work around concentrated welding fumes have a tendency to rapid development of pulmonary hemorrhage. Air masks and exhaust hoods give protection against the fumes but are not employed extensively. Treatment is unsatisfactory as long as the men are exposed to welding fumes. The only effective way to overcome the condition is a change of occupation. Men working at night seem to suffer more than men working in the day.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:105-138 (Jan. 22) 1944

Emphysema of Lungs. R. V. Christie.—p. 105.
Supervision of Pregnant Women in Factory Employment. J. V. O'Sullivan and L. B. Bourne.—p. 108.
*Five Cases of Jaundice Following Transfusion of Whole Blood or Human Plasma. R. E. Steiner.—p. 110.
Histologic Effects of Sulfonamide-Proflavine Mixtures in Rabbit: Some Experimental Observations. Dorothy S. Russell and Diana J. K. Beck.—p. 112.
Vaccination Against Typhus Fever. J. B. Penfold.—p. 114.
Treatment of Pediculosis Capitis. E. Blackstock.—p. 114.

Jaundice Following Transfusion of Blood or Plasma.—In the course of a few months Steiner observed jaundice in 5 patients who had been battle casualties in North Africa and who were admitted to a hospital in Britain two to three months after having been wounded. Then the jaundice developed. All the patients had had transfusions of whole blood, plasma or both in varying quantities. The treatment in every case was primarily some form of surgical intervention plus chemotherapeutic measures such as antitetanic and anti-gas gangrene serum and massive doses of the sulfonamides. The clinical picture of these 5 patients resembled catarrhal jaundice or infective hepatitis. It was a slightly febrile illness with symptoms of nausea, anorexia, slight abdominal discomfort, vomiting and signs of jaundice, liver enlargement and tenderness in the right subcostal region. There were, however, some factors which are not usually seen in catarrhal jaundice. In 3 of the cases there was a definite lack of free bile in the urine, with an excessive amount of urobilin present. In some of the cases there was a severe mononucleosis. The cause of the illness is unknown and it is impossible, in view of the lack of information about the incidence of jaundice among the untransfused troops in North Africa, to assess a connection between the transfusion and the illness. Nevertheless the fact that of 245 cases from North Africa in approximately 45 per cent of which transfusions were done, jaundice developed in 5, while it did not develop in 1 of the cases in which transfusion was not done suggests a connection between the two. Outbreaks of an illness resembling catarrhal jaundice following inoculation of people with human plasma, serum or lymph have previously been recorded. The author thinks that, while transfusion may be the cause of the jaundice, certain special circumstances must be attendant on the transfusion before jaundice is produced.

Edinburgh Medical Journal

50:705-772 (Dec.) 1943

*Poliomyelitis: Experimental Work in Egypt. C. E. Van Rooyen and A. D. Morgan.—p. 705.
*Mammary Cancer and Menopause. E. K. Dawson.—p. 721.
Laboratory Diagnosis of Diphtheria: Note on Some Present Day Methods. Helen A. Wright.—p. 737.
Digitalis in Cases Showing Normal Rhythm. D. M. Lyon.—p. 746.
Tuberculosis Service Patient. J. Johnstone.—p. 754.

Poliomyelitis.—Van Rooyen and Morgan state that 74 cases of poliomyelitis or encephalitis were reported during 1941 in Egypt among the Middle East forces. Nineteen of these terminated in death; the following year 32 cases were reported in 14 of which the outcome was fatal. It thus seems that the disease in Egypt was of a virulent type or else that many nonparalytic abortive cases escaped recognition. The authors' studies have been directed toward the isolation of strains of poliomyelitis virus by the inoculation of necropsy specimens of emulsified human spinal cord in monkeys and baboons. Their studies suggest that the baboon Papio hamadryas is highly susceptible to the disease and should be used as the animal of choice when attempting to isolate virus from human tissues, stools or sewage. They give a clinical description of 7 fatal cases of poliomyelitis. Six strains of poliomyelitis virus have been isolated from the 7 fatal cases. Large doses of sodium sulfadiazine administered to infected animals prior to or after onset of paralysis failed to arrest the disease. The authors summarize the morbid microscopic appearances observed in 38 cases occurring in the Middle East forces. The damage produced was exceptionally severe. The authors discuss the possible association of poliomyelitis with cases designated multiple neuritis with muscular wasting of the shoulder girdle.

Mammary Cancer and Menopause.—Dawson says that mammary cancer which shows the typical textbook picture is probably in the majority of cases already beyond cure. In all doubtful cases delay in treatment is justified only if there is proof that the condition is not malignant, and the only proof is histologic. Delay in diagnosis would be largely prevented if the principle was accepted that few considerations, apart from a young age, rule out the possibility of mammary cancer. As the age period rises, the probability of cancer increases. This is illustrated by a recent survey by Harvey and the author of all mammary lesions reported on, in one year, at their laboratory. In the period under review, 274 cases were studied. It was found that in patients over the age of 65 years all mammary lesions were carcinoma; over 60 years, 95 per cent were carcinoma; over 55 years 92 per cent were carcinoma; over 50 years 85 per cent were carcinoma; but under 40 85 per cent were benign; under 30 all were benign. During the "reversal period," that is between 40 and 50 years, there occurs the point at which benign and malignant tumor percentages are equal. During this period doubtful mammary lesions present difficulties. The pathologist may not be able to give a positive verdict if only a small piece of tissue is submitted. If this does not show cancer he can still give no assurance regarding the condition of the rest of the breast. It is difficult for the pathologist not to be biased in favor of simple amputation in these doubtful mammary cases of middle age. No sarcoma was found among the malignant lesions studied by the author; more than half of the nontumor lesions were single or multiple cysts. The author emphasizes that the age of the patient carries much weight in the diagnosis of mammary cancer. Sarcoma may be found at almost any age but tends to occur at the earlier age periods; carcinoma, a much more frequent form of malignant growth, is predominantly a disease of middle and later life. The normal growth and functioning of mammary tissue is primarily dependent on the ovarian hormones. The subsidence of reproductive activity with the gradual loss of ovarian stimuli during the climacteric implies the lessening of this control. The author describes the cellular changes which eventuate in carcinoma. The transition to malignancy may be due to (*a*) the loss of ovarian control over normal growth and stability of tissue in the mamma, (*b*) the action of other stimulating growth factors which are given opportunity as ovarian control subsides or (*c*) some expressly carcinogenic principle, formed possibly by perversion of sterol metabolism, because hormonal control is absent or aberrant; the instability of the mammary tissues at the time would then act as a predisposing factor. The large proportion of mammary and genital cancers, in relation to the total malignant tumor incidence in women, lends some probability to all three conceptions.

Prensa Médica. Argentina, Buenos Aires

30:2275-2326 (Dec. 1) 1943. **Partial Index**

*Gastroduodenal Ulcer in Children. O. Copello.—p. 2275.
Action of Progesterone on Duration of Pregnancy: Experiments. F. A Uranga Imaz.—p. 2309.

Gastroduodenal Ulcer in Children.—According to Copello, chronic callous gastroduodenal ulcer in children is rare. It occurs in children between 10 and 15 years of age. It is characterized by the extension of the ulcer to neighboring structures, especially the pancreas. The most frequent forms are those with some but not all the symptoms which are observed in adults and those with a perforation. The patients complain about gastrointestinal disorders of long duration and moderate frequent gastric pain. Hyperchlorhydria may be or may not be present. The patient's physical growth is retarded, the body weight is subnormal and the patient has anemia. The x-ray signs are the same as those which show gastroduodenal ulcer in adults. The medical treatment is of no avail. Fundusectomy is followed by permanent cure of the great majority of patients. Gastrectomy and gastroenterostomy are dangerous in chronic gastroduodenal ulcer in children. In the case reported by the author, fundusectomy (by Zoellinger's technic) was followed by permanent cure of the patient, which has lasted so far up to two years.

Book Notices

Sulfonamide Therapy in Medical Practice. By Frederick C. Smith, M.D., M.Sc., F.A.P.S., Lieutenant Colonel, Medical Reserve Corps, Army of the United States. Foreword by George Morris Piersol, B.S., M.D., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania, Philadelphia. Fabrikoid. Price, $5. Pp. 368, with illustrations. Philadelphia: F. A. Davis Company, 1944.

This book represents an attempt to offer a critical review of the current literature on the sulfonamides, the stress being laid on toxic reactions and the indications for their use. There are times when the reader will question the degree and point of emphasis; for example, in a discussion of the local use of sulfonamides appears the statement "Other minor objections to the local use of sulfonamides, such as absorption into the general circulation, local damage to tissue, and the development of resistant strains of bacteria. . . ." The consensus is not that which would hold such actions as "minor objections." Again penicillin is said to be "especially effective against staphylococcal infections where the sulfonamides are least effective." Did the author intend to convey the meaning which is obvious? The author also asserts that no toxic reactions have been reported to date following the use of penicillin, yet within the next few pages may be found a rather lengthy discussion of several reported reactions. Such carelessness does not serve to create enthusiasm for a book on a subject so important in drug therapy. Sometimes it is difficult to determine when the writer is expressing his own opinion or is merely reproducing the thoughts of some one who has published the results of original laboratory and clinical work in sulfonamide chemotherapy.

Perhaps any shortcomings toward the objective expressed in the preface may be ascribed to the author's offering a compilation of statements by other investigators—these statements apparently not being wholly tempered by reports of personal experience. There are some who will hold that this is just another book on sulfonamide therapy. Nevertheless, since this subject is one on which so much confusion exists, no harm will follow the interested investigator in accumulating all sincere reviews. The material in the present volume is laid out in alphabetical order and is supported with an interesting number of tables, charts and illustrations. The subject index could be more complete, but a practical additional feature is an index of authors.

Gastro-Enterology. (In Three Volumes.) By Henry L. Bockus, M.D., Professor of Gastro-Enterology, University of Pennsylvania Graduate School of Medicine, Philadelphia, and Colleagues at University of Pennsylvania Graduate School of Medicine. Volume II: The Small and Large Intestine and Peritoneum: Diagnosis and Treatment of Disorders of the Small Intestine, Colon, Peritoneum, Mesentery and Omentum. Cloth. Price, $35 per set. Pp. 975, with 177 illustrations. Philadelphia & London: W. B. Saunders Company, 1944.

To this volume several members of the faculty of the University of Pennsylvania have contributed chapters on subjects of special interest. The book covers the small intestine, the colon, the rectum and the peritoneum. The consideration is thorough, modern and practical. Each chapter is supplemented by a suggestive bibliography. The form of the considerations is classic, following the discussion of each phase from etiology and pathology through to treatment. The illustrations are excellently produced and well chosen, some of them in colors. The attention given to diet is especially important in a work of this type, and the author seems to have realized the extent to which the practicing physician can assimilate and apply information in this field.

Miracles Ahead! Better Living in the Postwar World. By Norman V. Carlisle and Frank B. Latham. Cloth. Price, $2.75. Pp. 288. New York: Macmillan Company, 1944.

In this analysis of what the advances of the war period are going to bring to life, one chapter concerns food and another is entitled "Medicine Looks Ahead." So rapid, however, has been our advance that it may well be said that both these chapters are simply indicative of beginnings in fields which have already gone beyond most of what the chapters present. Thus from the point of view of medicine this is simply a journalistic work which is already outdated. Furthermore, the authors have accepted as scientific material that has not yet even begun to be established and some of which has already been discredited.

Deafness and the Deaf in the United States Considered Primarily in Relation to Those Sometimes More or Less Erroneously Known as "Deaf-Mutes." By Harry Best. Cloth. Price, $6.50. Pp. 675, with illustrations. New York: Macmillan Company, 1943.

The author's first book on this subject was published in 1914. Since that time so much has been accomplished in the field of hardness of hearing that the extensive additions and revisions have made of this a wholly new book. He has had the assistance of great numbers of leaders in the field. The author is a sociologist who has been from time to time instructor in state schools for the deaf in Nebraska, Washington, Alabama and New York. This book makes available a consideration of recent research on the causes and prevention of deafness and excellent statistics on practically every phase of the subject, including its economics, legal attitudes and popular concepts. There are statements regarding organizations in the field concerned, provisions for education and many similar subjects. The author has evidently read widely in the complete literature in the field. His conclusions consider the problem of marriage, heredity, industrial aspects and the manner in which the state may be of assistance in meeting the situation. The author makes especially a plea for individualization in the handling of the deaf, since each case is a problem to itself.

The Riddle of Cancer. By Charles Oberling, M.D. Translated by William H. Woglom, M.D. Cloth. Price, $3. Pp. 196. New Haven: Yale University Press; London: Oxford University Press, 1944.

Although the author of this book is convinced that the most likely concept of the causation of cancer is that view which places the blame on an unknown virus—a view which, incidentally, few other leaders in the field of investigation follow—he presents in a series of chapters the most that is now known relative to the diagnosis and treatment of this condition. The three chief hypotheses to which he gives consideration are the irritation, embryonal and microbic hypotheses. He then presents an extensive review of recent work in the field of experimentation on cancer and concludes with a point of view that the virus hypothesis meets all that we now know relative to parasites, chemical agents and heredity as factors in the field of tumor production. The translation is excellent.

The Harvey Cushing Collection of Books and Manuscripts. Publication No. 1, Historical Library, Yale Medical Library. Cloth. Price, $8.50. Pp. 207. New York: Schuman's, 1943.

When Dr. Harvey Cushing died he bequeathed his books and manuscripts to Yale University and set aside a fund for cataloguing. This has made possible the present volume, which lists all the printed books, manuscripts and bound memorabilia which were turned over to the university. Personal correspondence was not catalogued but will become available ultimately in his biography. The collections are indexed as manuscripts, orientalia, incunabula and general works. Altogether the collection is one of the most valuable in the field of medical history. It indicates the great breadth of Dr. Cushing's fields of interest as well as his literary and scientific judgment. The book has been beautifully designed and printed.

Fighting Fitness: A Preliminary Training Guide. By C. Ward Crampton, M.D. With the editorial assistance of Ken Littlefield. Cloth. Price, $2. Pp. 251, with illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1944.

This is a typical Crampton book written in his usual crackling style for boys. It is on your toes stuff all the way through, especially with reference to athletic heroes like Lou Gehrig and "come on boys, let's get busy" inspiration interspersed with sound information and "how to do it" sequences. It is illustrated with amusing match stick figures demonstrating exercises and contains achievement tables in which the boy can record how many push ups and set ups he can do on the first try and up to the fifth try. There are a few full page photographs, always of action and always excellent of their kind. The titles of the various chapters, to name only a few, are of the sort to appeal to the boy and to fill him with the ambition to be like the heroes who are held up as examples; typical titles are Courage, Fear and Flinches; The Fighter's Feet; The Fighting Fall; Rough and Ready; Yank Boxer Beats Jap; The Fighter's Prayer; How to Look Like a Soldier and Why; The Fighting Heart. If the youngster is interested in premilitary physical conditioning, this book is an excellent guide.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EFFECTS OF SKIN SECRETIONS ON PEARLS

To the Editor:—**What effect do skin secretions have on discoloring a pearl necklace, particularly if the wearer of the necklace has taken medications including sulfur preparations, iron preparations or various vitamins?**

Frank L. Putman, M.D., Honolulu, Hawaii.

ANSWER.—Scientific explanation for the effect of skin secretions on pearls has not been discovered. Pearls are the softest of all gems, composed chiefly of calcium carbonate in the form known as aragonite, with a little organic matter and a small amount of water. Dakin (W. J.: Pearls, Cambridge University Press, 1913, p. 61) quotes Harley's analysis:

Calcium carbonate	91.72
Organic matter	5.94
Water	2.23
Residue	0.11

The surface consists of extremely thin layers of nacre, about 0.0005 mm. thick, bonded by an albumin, conchin.

Catelle (W. R.: The Pearl, Philadelphia, J. B. Lippincott Company, 1907, p. 71) says that the lustrous surface of the pearl is injured by the operation of boring for stringing, by hot water, by certain gases and by age. Aging of pearls is probably really drying, for Kunz and Stevenson (The Book of the Pearl, New York, Century Company, 1908, p. 395) tell of the necklace of the Empress Eugenie, bought about 1860, "in as good condition today as when she first obtained it." The pearls of the Empress Maria Theresa in the royal treasury in Vienna were also in excellent condition. They state that pearls are sometimes injured by exudations from diseased skin, by acid perspiration, by sulfurous smoke or by bright sunlight.

An authority on physiologic chemistry and the action of the vitamins, in a personal communication, states that there is no possibility that the administration of iron or vitamins by mouth could result in any damage to pearls worn next the skin. The question of the effect of ingested sulfur is not so easily decided. Klauder and Brown (Certain Phases of Sulfur Metabolism of the Skin, *Arch. Dermat. & Syph.* **34**:568 [Oct.] 1936) found that the sulfur content of the skin, including sweat, sebum and scales, is wholly organic in form, cysteine, cystine, glutathione and methionine. In infancy and childhood it is high, diminishing to the age of 16, after which there is little change. In most diseases of the skin and in arthritis and tuberculosis it is diminished. Only in patients with disseminate neurodermatitis, psoriasis, melanomas and in some cases of lupus erythematosus is it increased. In the opinion of the chemist quoted one must think of the possibility of alkaline sweat changing the organic sulfur to sulfides, which might affect the pearls; but sweat becomes alkaline ordinarily only when profuse, which would dilute the sulfur and lessen whatever effect it might otherwise have.

The reaction of the skin is normally acid, becoming less so when sweating becomes visible. Brill (Ueber den Sauregehalt des menschlichen Schweiss bei Hautkranken und Hautgesunden, *Arch. f. Dermat. u. Syph.* **155**:199, **156**:488, 1928) records that the sweat of patients with psoriasis is more acid than that of others. An eminent American authority on pearls, Mr. Paul Juergens, in a personal communication expresses doubt concerning the injury of pearls by perspiration but concedes that a harsh, dry skin may cause abrasion of the surface of the pearls, thus destroying its luster. He writes "I notice in Kunz and Stevenson's Book of the Pearl, page 397, they state, 'Furthermore, pearls have never lived—and hence they can never die' (referring to the expression frequently used 'dead pearls'). I have always felt it better to say that pearls may dry but not die. The 2.23 per cent of water is at least moisture. If that moisture should evaporate there might be a tendency for the edges of the minute patches of nacre to separate and form what may be termed a surface crack. This, I think, is true because a pearl with what we call a surface crack can very often be 'healed' by placing the pearl in a corked container which is half to three quarters full of a fine, thin mineral oil and ether. The container is warmed very gradually and the fumes of the ether cause pressure and the oil is driven into the pearl. On cooling, the contraction naturally forces excess solution out of the pearl and retains sufficient oil in the minute separation to put the minute patches back into place. We call this healing. My thought is this: If through excessively dry skin or from any other reason the minute patches separate, the pearl is vulnerable and could take on any secretion from the body. I do not know, of course, if sulfur or iron is contained in perspiration or any other secretion of the skin. If there is, then I should think the pearl with its separation layer would absorb that secretion—iron, sulfur, the salt or acid of perspiration—and have a tendency to widen the separation rather than heal it. Would the oil of the skin be strong enough to counteract these secretions?"

To prove that excretion of sulfur through the skin may damage pearls it would be necessary first to rule out damage by other factors—rough skin, strong sunlight, other drying influences—and show by comparison with a closely similar pearl kept under ideal conditions as a control that the pearl worn by the patient under sulfur treatment had deteriorated.

DERMATITIS FROM BEET-SOL

To the Editor:—**I am interested in obtaining information with regard to the chemical nature of a whitish granular powder which a patient of mine employed to wash soiled painted walls. The material is "Beet-Sol." He purchased it in bulk from a paint store. Following its use the skin of his hands and forearms showed erythema, and slight swelling developed on the fingers. Apparently the condition was a dermatitis due to contact. Can you furnish me with information relative to the chemical nature and the appropriate neutralizing chemical, if any? Will this chemical attack rubber gloves?**

Braham H. Golden, M.D., New York.

ANSWER.—"Beet-Sol" is said to be trisodium phosphate. This chemical is a strong alkali, and getting the hands wet with a concentrated solution of trisodium phosphate for any length of time will cause dermatitis. If a solution of this compound is to be employed to wash soiled painted walls or anything else, it should not be permitted to come in contact with the skin. This can be accomplished by using a long handled mop or by wearing rubber gloves and aprons made of some impervious material such as rubber, neoprene, vinylite or pliofilm. Trisodium phosphate will not readily attack rubber.

Paint removers and paint cleansers in general consist of strong alkalis or solvents and are primary skin irritants and should be handled according to the precautions noted.

SERUM ADMINISTRATION AND ALLERGY

To the Editor:—**The query and answer "Anaphylaxis Under Anesthesia" in the Feb. 26, 1944 issue prompts me to reiterate and supplement my comments on serum precautions which you published under Queries and Minor Notes, Oct. 31, 1936 and in Correspondence, Dec. 5, 1942 respectively.**

Dependence on the history, skin or eye test as criteria for using serum with safety is hazardous except in the most experienced hands, and even then not without danger. The reasons for this are several:

1. Many patients are not aware that one or more members of their family are allergic.

2. The same reason holds true with the patient's previous history. Many people do not know whether or not they are allergic. It would surprise physicians in general to learn how many frank hay fever and other pure allergies the specialist sees that were termed everything but allergy.

3. Dependence on the skin or eye test presupposes more than a little technical skill. For example, by the intracutaneous route I have seen the test usually performed with the insertion too deep in the skin. This obscures a moderately positive test and is classed as negative. It is the exception to see a control test done simultaneously, and this is important.

I repeat and elaborate on the procedure of administering serum:

1. Do not give a serum injection without realizing that it may be dangerous. Do not hurry; consider the findings.

2. Get a careful family and previous history, inquiring about allergic diseases not only by specific names (which many people do not know) but by symptoms also.

3. Are you sure of your skin or eye tests?

4. If two or three tests are strongly positive and serum must be given, use a despeciated serum or rabbit serum, the latter requiring rabbit serum allergy tests first.

5. Inject epinephrine hydrochloride 1:1,000, 4 to 8 minims (0.25 to 0.5 cc.) subcutaneously, depending on age, ten minutes before any serum injection.

6. If injecting serum intramuscularly or subcutaneously, use the upper extremity about midway, so that in the event of untoward immediate symptoms a tourniquet can be applied proximally. Obviously, this would be impossible if the injection should be made in the gluteal region, where so many are given.

7. Owing to the evanescent nature of epinephrine, and to avoid or minimize late serum reactions, give orally ephedrine and phenobarbital two hours after the injection and continue every three or four hours for three to five days.

If serum must be given, use epinephrine and the ephedrine-phenobarbital combination as outlined. **David Louis Engelsher, M.D., New York.**